TRIAL TRIP OF FIRST STANDARD SHIP. *See p.* 230.
MAINTENANCE OF THE BRITISH MERCANTILE MARINE. *See p.* 220.

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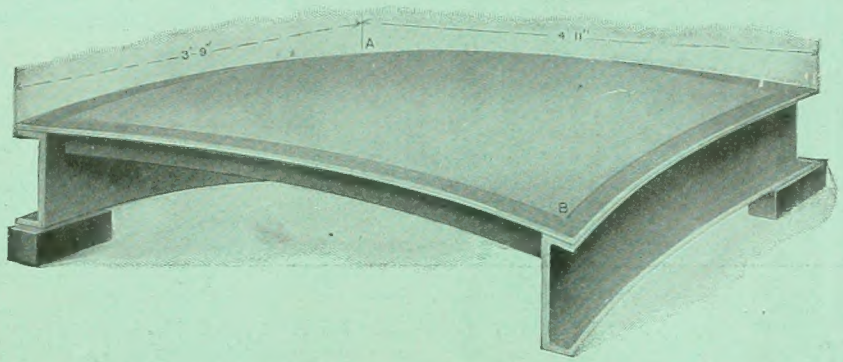

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The First Standard Ship.

THE announcement that the first standard ship has satisfactorily completed her trials and is now in commission as a cargo carrier for the British Government, marks the culmination of the policy of abandoning the system of letting each yard turn out the type of ship for which it is best fitted. It remains for the policy to be justified by the rapid turning out of large numbers of similar vessels. One of the first steps undertaken by Sir Joseph Maclay on the formation of the Ministry of Shipping was to call together an expert committee of shipbuilders and marine engineers, and as a result of their deliberations an ambitious programme of standardised ship construction was decided upon, whereby it was hoped to build large numbers of efficient cargo-carrying steamers in the shortest possible time as one of the most effective means of countering the German submarine campaign. The keel of the first vessel was laid in February, and she was completed in less than six months, whilst it is hoped that when the scheme is in thorough working order each vessel will take about four months to build. Very few particulars have been divulged as to the details of these ships, although it is known that a minimum amount of steel has been used in their construction, due regard having been paid to war conditions which involves the question of speed. The ships are to be entered in the Register Book as belonging to "His Majesty, represented by the Shipping Controller," but their destiny after the war can only be a matter of speculation.

Begging the Question.

In the course of a conversation which he had with the representative of the Press who attended the trials of the first standardised ship, Sir L. C. Money made a dangerous incursion into the realm of the general question. He claimed, in effect, that by adopting standardisation, the Board of Trade, the Shipping Controller's Department, or the Merchant Shipbuilding Advisory Committee—nobody has yet told us to which of these bodies the credit of the innovation is due—put the country in the way of getting tonnage more quickly and in greater quantities than would have been possible if shipbuilders had been left free to duplicate their current designs. The defect of that sweeping statement is that there is no criterion by which to judge it, and its danger is that somebody may tell Sir Leo that he does not know what he is talking about. On the whole, it would have been, we think, to show greater wisdom to leave the general question severely alone, because the state of affairs for which the standardised ship is claimed to be the cure was created by the Government itself. It brought merchant shipbuilding practically to a standstill, and it is quite sound to argue that if, instead of doing so, it had provided the necessary materials and men, the existing merchant shipbuilding organisation would have accomplished all that was required. The Shipping Controller's Parliamentary Secretary might profitably have let this sleeping dog lie. His colleagues, too, who have so much to say in praise of their standardised ships will lose nothing in dignity by remembering that there are two sides to the general question of standardisation.

The Consular Service.

A reform of the Consular service has been inevitable for years, particularly in regard to the collection of commercial intelligence. The decision of the Government to create an enlarged Commercial Intelligence Department, based on an improved Consular service, comes to meet an imperative need, and if it is handled with sagacity and skill it will render valuable assistance in the task of restoring British foreign trade at the conclusion of the war. In any steps which are taken to improve the efficiency of the Consular service, it must be borne in mind that its duties are manifold. A British Consular officer at a foreign port finds that much of his time has to be devoted to the supervision of matters connected with shipping. He exercises functions in relation to the engagement of seamen, deals with complaints, receives the deposit of documents, makes endorsements, assists seamen in distress, and performs many other duties. This side of a Consular officer's work at a busy seaport abroad often monopolises nearly the whole of his attention, a fact which must be constantly and clearly recognised in any plan of Consular reform. Such matters as the allocation of posts and personnel are involved in the carrying out of the Government scheme. The important thing is to establish a service that will be competent to discharge all its functions adequately in the light of modern requirements.

War Insurance Cost for Free Steamers.

The additional cost which devolves on owners of free steamers under the new Government War Insurance scheme has not been long in bringing forth protests from those concerned. The complaint is that the outlay caused by the new conditions is a handicap of considerable dimensions, and the justice of the complaint is practically admitted by an announcement that the Ministry of Shipping and the Board of Trade have the matter under consideration. In the meantime the owners are exhorted to cover their vessels under existing conditions, and carry on. When the matter has been fully investigated there is every probability of a solution of the difficulty being found, and in adjusting matters, the extra expenditure incurred by insuring at the present rates is to be taken into consideration in adjusting the rates payable in the future. It seems that when the matter comes up

for consideration each case is to be judged on its merits; so there is every hope that some possible hardships which might occur will be provided for. As an instance, a vessel which is insured on the current terms might be lost before any adjustment could be made. The owner having disbursed his premium would be handicapped to an extra degree if in addition to the loss of his vessel he was penalised by being unable to obtain the benefits of any amelioration obtainable by his more fortunate brethren whose vessels remain intact.

King's Enemies' Risks.

It is necessary that attention should be drawn to the fact that the Government War Insurance policy does not afford complete cover to owners of "Free" steamers against all the perils which come under the category of war risks. The striking of a mine laid by a country with which the Allies are not at war is an instance of this, while the recent decision that a collision caused through steaming with lights out, owing to hostilities is a war risk, might also prove to be a case in point. It would therefore seem necessary that owners should protect themselves against loss from such causes as we have indicated. The new Government War Insurance scheme has not entirely settled down as yet, and it is probable that when such matters as these have received full consideration a more complete form of insurance will be achieved. Until then it would be well if owners consulted their brokers or the mutual clubs in which they are interested, in order to be assured that their cover is complete.

The Japanese Situation.

Shipowners in Japan have not, so far, we understand, been prohibited from selling vessels—with the exception of those running in subsidised services—to foreigners, with the result that, in consequence of the world's restricted market, enormously high prices have been obtained for Japanese tonnage. In fact, a figure of £70 per ton deadweight has more than once been mentioned in this connection. Both the shipping and shipbuilding industries in Japan have, as a result of the abnormal conditions—it has to be remembered that to a very large extent the former is unaffected by war losses or restrictions—are enjoying unprecedented prosperity. It is not, therefore, surprising to learn that the Government has now under reconsideration the subsidy and bounty systems which in the circumstances can, it is believed, be modified or abolished altogether. It is, indeed, thought that this form of assistance to the shipping companies will be materially decreased when the existing contracts come to an end next March. As regards new construction, steps are, we hear, being taken to suspend all payments by September 30 of next year. At present the chief obstacle in the way of development is the shortage of steel, shipments having been stopped from the United Kingdom, whilst American supplies have been greatly decreased. The United States Export Council is now, however, said to be willing to meet Japanese demands in this respect, provided that, when the ships are completed, they will be made available not only for the carriage of munitions of war, but also of foodstuffs and other things essential to the support of the Allied peoples.

German Monopolies Going.

When the war is over—whenever that may be—there are many industries formerly monopolised by the Germans that will be carried on as the result of British enterprise. Incidentally, we may add, they will also provide more employment for our shipping. Before the outbreak of hostilities, for instance, palm kernels were taken by German boats to Hamburg, where they were converted into cattle food and sent to England. There are now works for the purpose in the United Kingdom, and, so far as this particular commodity is concerned, it is not likely that German steamers will see much of it in future. The same remark may be made about wattle bark for tanning, the bulk of which, before the war, was carried from Australia or Natal to the Elbe, where it was dealt with and shipped to this country. There are many other instances of the kind. Formerly, the monazite deposits in Brazil were the only commercial source of supply of thoria required for the manufacture of incandescent gas mantles. They were controlled by a German syndicate, which also obtained control of a company formed to work the Indian deposits. Important discoveries have, however, been made in Ceylon which will end the long struggle to rescue the gas-mantle industry from German domination. Then, again, over three years ago the Germans had a complete monopoly of wolfram, from which tungsten, for the hardening of steel, is obtained, the bulk of the world's supply being produced within the British Empire. It is now understood that Harland & Wolff have secured an important interest in a Burmese property. The Commonwealth Government may be relied upon to look after the Australian deposits. As regards the phosphate concessions in the former German islands in the South Pacific, Elder, Dempster & Co. have bought for £575,000 a large block of shares in a company which was recently sold under the Trading with the Enemy Act, so that German interests are at an end there too. Other big developments of the kind are in progress.

The State and Shipping.

After reading newspaper comments on the report of the Shipowners' Committee, to which we refer more fully on page 220, the man with no maritime interests probably came to the conclusion that the future of British shipping is hopelessly obscure. As a matter of fact, it is not; British shipping sees its objectives and is in no danger of losing its direction. The average man's pessimism about the prospect is, however, not inexcusable, for so far, the newspapers on which he depends for guidance have shown an unaccountable ignorance of shipping. For instance, in the course of some speculations as to what the Government may do with regard to shipping, a London evening paper suggests that it will not be able to afford to leave the rebuilding of the Mercantile Marine to private enterprise. Our merchant shipping is, in time of war, it says, of vital importance; therefore, the State must itself see to its complete restoration and also, presumably, to its maintenance as an efficient organisation when restored. The discovery that without an adequate Mercantile Marine there can be no sea power, properly so-called, comes late in the day to both Government and newspapers. But instead of being an argument in favour of a prolongation of the State control of shipping this is really convincing proof that the best thing to do is as quickly as possible to give British shipowners freedom to go ahead with their reconstruction schemes. That is so because the Mercantile Marine, which is the magnificent complement of the Grand Fleet, owes its existence not to the State, but to the enterprise of the private shipowners whom Governments regularly snub and newspapers periodically lecture.

War Workers' "Sacrifices."

A considerable number of people in shipbuilding and engineering are, we imagine, of Dr. Hunter's opinion regarding the "sacrifices" which, it is claimed, our war workers are making in the interest of the nation. The chairman of Swan, Hunter & Wigham Richardson, Ltd., suggested to the shareholders at the annual meeting of the company that there was more talk about "sacrifices" than the reality justified. Our opinion is that there certainly is, especially in some Trade Union circles. The trick is that, although the conduct of many of the workpeople leaves very little to be desired, too high a value is being put on their service by some of their leaders and too much consideration claimed for them. When they strike, threaten to strike, or otherwise give trouble, it is said that their prolonged spells of hard work have detrimentally affected their nerves and made them particularly sensitive to tactless treatment by employers, the Ministry of Munitions or the Admiralty. To some extent the statement is, no doubt true; but on the facts these causes of unrest are less important than

they are alleged to be. The current trouble has, as everybody knows, several roots. When, however, they are all dug up, so to say, and closely examined, the plainest fact of the matter is that workers are uneasiest when there is something to be gained—higher wages, for example, or a new condition—by uneasiness. In a trade union sense the tactics are, of course, quite sound; but they obviously do not help to establish the claim that workers are making large sacrifices in the interest of the nation.

Inconsistent Trial Results.

One of the most perplexing problems which naval architects meet with is the different value of result given occasionally by sister ships on trial. For example, two vessels built by the same builder and to exactly similar dimensions and form showed a difference of 25 per cent. in Admiralty constant. Another pair of ships, built by one of the best builders in Britain, gave performances differing 12 per cent. in value. It is very difficult to account for such vagaries in performances. Several reasons may be suggested. In the first place a certain latitude must be allowed for in the measurement of the indicated horse-power. Prof. Peabody has declared that it is impossible to measure power accurately, an error of 5 per cent. can easily creep in even with the most careful observation. Again, the mechanical efficiency of the machinery may vary with different ships, too tight glands or badly oiled bearings may absorb a considerable portion of the power developed. The weather conditions and the temperature of the sea at the time of trial have also some effect. In the compilation of data it is not always customary to take accurate account of the latter conditions, with the result that trial results obtained under the most favourable conditions may be inadvertently compared with those procured under very adverse circumstances. These vagaries in performance point to the necessity of the greatest care being taken in the observing of results, and of taking into account all the conditions under which the trials were made.

Composite Ships.

It is well known that one of the ways in which America has decided to play her part in the war is to draw upon her enormous resources for the benefit of the Allies, and to do this it is necessary for her to construct a large number of cargo-carrying ships. Particulars of the steps which are being taken to produce steel ships have already been published, but the shortage of steel and the need for rapid construction have led to the construction of wooden ships. The limitations of these vessels with regard to length and weight of engines that can be carried, has caused a revival of the system much in vogue during the transition period from wood to steel, viz., the composite ship, in which the framework of the hull, keel, frames, keelsons, &c., is made of steel angle bars or other rolled sections, whilst the skin of the vessel and the decks are of wood; and already contracts have been placed for a number of these vessels. That ships built in this way can be of practical service is obvious when one considers that only 50 years ago sloops and light cruisers were built upon this plan for the British Navy. The great difficulty which has to be faced is the keeping of the vessels watertight owing to the different rates of expansion of iron and wood, and it is further pointed out by the opponents of this mode of construction that the old composite ships were seaworthy because they were sheathed with teak or seasoned oak, and not with the soft timber which must of necessity be used at the present time.

Motor Lifeboats.

The barbarous practice adopted by the German U-boat commanders of sinking vessels irrespective of their position and without any thought as to the safety of the passengers and crew, has often resulted in these being left in open boats far away from land and in a rough sea. One of the greatest aids to safety under such conditions would be a small motor boat or steam launch capable of taking the other boats in tow, thus assisting them to make for the nearest shore, and in addition it could keep them all with their heads against the direction of the waves, and thus in a large degree save them from the possibility of being swamped. It is obvious that even in ordinary times the provision of such a boat might be instrumental in saving many lives in the event of shipwreck, and it is therefore one of the requirements of the Convention for the Safety of Life at Sea that all passenger vessels should be provided with a small motor lifeboat for the purposes mentioned. Already the Spanish Government has made it compulsory that all passenger vessels shall conform to the findings of the Convention, and it may be recalled that the *Santa Isabel*, described in our issue of August 16, although not a large vessel, carries a small steam launch under davits. Whilst the provision of such a boat has not been made compulsory in this country, many of the larger vessels do carry motor boats which could serve as lifeboats in case of shipwreck. The Marine Engineers' Association has urged that all vessels should be provided with a motor boat "so that shipwrecked sailors should not have to undergo prolonged exposure in ordinary ship's boats," and it is probable that more will be heard of this question in the near future.

Speed and the Submarine Menace.

It is said that one of the safeguards against attack by submarine is the possession of a reasonably high speed. The minimum has been set by various authorities at from 15 to 18 knots. Relatively, a smaller number of high-speed vessels have been sunk than those of lower speed. It is considered advisable therefore to give to cargo ships that are now under construction a higher speed than has been customary hitherto. This can only be done at some sacrifice, and the deadweight such vessels will carry in relation to their displacement will be much less than in slower and fuller ships. The attainment of this speed will necessitate the adoption of a finer form than that usually adopted in cargo ships, whilst the horse-power required will be much greater than that of the average tramp of similar displacement. More bunker space will be requisitioned and a larger crew carried. In normal times the fast tramp idea finds little favour. If experience has shown, however, that the possession of good speed gives a reasonable immunity from attack, why should not all the cargo vessels at present under construction and contemplated be designed and powered so as to give this desirable speed? If the safety of the country is dependent on the sure arrival of our merchant ships, this precaution of affording plenty of engine power should be given in all future war-time construction.

Desirable Degree of Accuracy.

It is not uncommon to see the horse-power of a vessel given to two decimal places or the displacement stated to an absurdly accurate degree. Such arithmetical accuracy should have no place in ship work, where there is no guarantee that the methods available for measuring power are correct to within 5 per cent., or that a vessel has been built to within an inch or so of the lines as laid off. In other aspects of shipbuilding also a broad and reasonable view should be taken. Some time ago attention was called in these columns to the methods adopted by the Board of Trade in measuring vessels for their safety certificate; and the ridiculous accuracy striven after by surveyors, when it was evident on the face of it that the vessels had ample reserve of buoyancy, was criticised. A somewhat analogous matter has arisen in connection with the standard ships. Although these vessels have been built on similar lines, and so many are exactly alike in internal arrangement, we understand that the measurement of each, for the assignment of tonnage, is being undertaken. At the best a difference of only a few tons can possibly be obtained, and the personal error in the measurement of different ships would probably amount to more than the actual differences between these vessels. It should surely be sufficient to measure one of each type and assign the same tonnage to all the vessels of that particular class.

THE MAINTENANCE OF THE BRITISH MERCANTILE MARINE.

THE voluminous report of the Committee appointed by the Chamber of Shipping of the United Kingdom and the Liverpool Steam Ship Owners' Association covers too wide a scope to be disposed of in a summary manner. The conclusions of the committee which we publish on pages 227-30, refer to what its members are pleased to call "purely shipping questions." Other sections, which we hope to deal with in the near future, deal with the general economic aspect of shipping in relation to the markets of the world. This necessarily includes such questions as the encouragement of British trade by means of improved technical and commercial education, the collection and distribution of commercial information, special taxation imposed on overseas trade, such as light dues and certain French impositions, the fostering and development of the markets with such cognate subjects as passenger traffic, harbour development and railway facilities, and competition.

Students of shipping economics will recollect the report published in October of 1915 by the Liverpool Steam Ship Owners' Association on the effect of the war on our overseas shipping, and, on comparing the careful presentation of facts and statistics of the report now issued with the report of two years ago, will easily trace the influence of Sir Norman Hill on the later report. Those who are familiar with Sir Norman's lucid form of expression, the logical array of facts and convincing arguments, will wish for no better auspices. The report is—publicly at any rate—the first fruits of the rejuvenated Chamber of Shipping co-operating with that equally important shipping centre, Liverpool. It is a tribute, therefore, not only to the energetic secretary of the Liverpool Association, to whom we have just referred, but also to the secretary of the Chamber, Mr. Cleminson, whose appointment early this year heralded a more vigorous handling of the affairs of this body.

We are not, however, concerned with personalities, else we would perforce go *seriatim* through the list of members of the committee enumerated on page 227. They may be left to speak for themselves, while we refer to some of the more prominent findings in the report.

The breadth of view with which the subject has been handled is not the least commendable feature of the report. It is shown at once in the introductory paragraphs, which we summarise elsewhere. It will, moreover, take by surprise a considerable section of those who have been clamouring for all sorts of things on behalf of British shipping. One of the most striking of these is the unequivocal disavowal by the committee of the policy of excluding enemy nations from the use of British coaling stations, and opposition to the principles of the old navigation laws, as to the expediency of which we have several times expressed our doubts. There is also the finding that it will not be wise to insist on the prohibition of the employment of foreigners as agents for British shipping abroad.

The portions of the report which we have reproduced are indicative of the trend of the committee's proposals as regards constructive criticism, and while we do not intend in this brief outline to cover any but the fringe of the points raised by the report, we might refer to the conclusion they have arrived at after carefully sifting the available data on the subject, that the belief so commonly held that the United Kingdom was ceasing to be a nation of manufacturers and producers and becoming merely a nation of merchants and middlemen is entirely unfounded. They find, however, that great as was the magnitude of the United Kingdom's foreign commerce, "nevertheless, with more care, foresight and industry, the progress might have been still greater." To this end they suggest that our Consular services should be improved and, *inter alia*, that such onerous charges on the cost of ocean transport, as Suez Canal dues, light dues and French brokerage and *surtax d'entrepot* should be modified, if not abolished.

The principle of standard ships finds but scant praise, and ship repairers will no doubt be interested in the proposal that for two years after the war ship-repairing facilities in the United Kingdom should be reserved for British shipping. Light is thrown on the "ton-for-ton" policy in the suggestion that vessels taken from the enemy should be sold in open competition among the Allies and the proceeds realised should be applied as part of the general indemnity and not in recoupment of the individual losses of shipowners, cargo owners or underwriters. In enumerating this policy the committee are but affording another instance of the broad-minded manner with which they have approached the whole question. This is admirably summed up in the following excerpt from the report :—"The only sure foundation for the future success of the British mercantile marine must be the safety and the prosperity of the nation as a whole, and the policy to be adopted must be that which is best calculated to attain that end, whatever may be the disadvantages it imposes on British shipping."

ESTABLISHED SHIPYARDS AND STANDARDISATION.

NOW that the world's more important maritime countries have definitely taken up the standardised ship idea, the bearing of the movement on the businesses of shipping and shipbuilding may not unprofitably be more or less closely examined. There is not the least doubt that the policy of standardisation is, in the circumstances which unfortunately prevail, and which will continue to prevail for some time after the war, sound. By following it we shall make up the world's shortage of tonnage more quickly now than we could do by following any other.

In subscribing to that belief, however, we must be careful not to lose sight of two important facts. One is that the circumstances which unfortunately prevail might, with proper foresight, have been avoided, and the other that our failure, or neglect, to avoid them prospectively involves existing shipbuilding establishments in economic difficulties of a rather serious character. It is not suggested that our principal enemy's indiscriminate destruction of merchant shipping might have been foreseen, although action of that sort by the Germans was never what could truthfully be called a remote possibility. But considering the extent to which Allied strategy relied on sea power our authorities cannot be wholly absolved from blame for allowing the mercantile shipbuilding industry to come practically to a standstill. That could have been avoided. And it ought to have been avoided; because out of it has arisen the evil which the standardised ships are intended to cure. If it had been avoided, we should have had an active and highly organised mercantile shipbuilding industry ready to our hands the moment the submarine piracies began; because it was not avoided we have had radically to reorganise both the production and operation of merchant shipping.

To speculate about what might have been is, of course, as unprofitable as ploughing sand would be. The question will then be asked, why do we do it? We do it because we wish to make the point that the economy of shipbuilding is vitally affected by what is happening. If the construction of merchant ships had not been allowed, or caused, to come to a standstill, we should have had to-day a normal industry in operation. Its productive capacity would, of course, have been greater.

But the growth would have been economically natural, and that is exactly what the growth of the standardised industry is not. In order to make up the leeway lost in 1915 and 1916 berths are being multiplied, new plant and machinery put down, and the preparation of the materials of hulls and engines spread over a larger area. These things are admittedly necessary at the moment. We agree, too, that there will be plenty of profitable employment for the fixed capital which they represent for some time after hostilities cease. The world's need of cargo ships is very great, and will take much effort and a great deal of time to satisfy.

But consider the effect of all this fixture of new capital on what may be called established shipbuilding—especially the established shipbuilding which evolved that economic wonder "the tramp," and was looking to a continuance of profitable employment in further developing it. All must now build standardised ships—not because they are believed to be better than ships of ordinary types, or because owners prefer them—but because under the control of the State the manufacture and preparation of materials, and the construction of hulls and machinery, have been reorganised on a standardised basis in order that the output of tonnage may be abnormally increased. That the output is being abnormally increased is not in any degree doubtful. The ships are being found, and they will continue to be found until the necessities arising out of the war are met. Standardisation is unquestionably capable of accomplishing that. Unfortunately, its capacity will not be, by any means, exhausted when the necessities arising out of the war have been met. The highly-efficient organisation will inevitably go on until it has glutted the world with tonnage.

Assuming that neither shipping nor shipbuilding is, strictly speaking, State-owned, the result will be one with which we were not unfamiliar in pre-war days. The competition for contracts—even contracts on standardised ships—will be terribly keen, and nobody will find it easy to live in the economic heavy weather which ensues. It may be argued that that sort of thing happens in most businesses. Admittedly it does; it happened regularly in shipbuilding before the war, although never on this scale. Our point is, however, that the prospect of it now on an exceptional scale leaves established shipbuilding with a good grievance. If established shipbuilding had been allowed to continue its normal development there would have been no leeway to make up, no need for standardisation, and no call for the fixture of new capital. While the leeway was in the making it lost good money; that it should be faced with the prospect of losing more when the industry is on its course again seems to us to be a genuine hardship.

IMPROVEMENT OF CONDENSING APPARATUS.

IT is usual to devote a considerable amount of thought to the design of the main engines of a steamship in order that it may be possible to operate these with the utmost economy, but the fact must not be lost sight of, that the numerous auxiliary engines which much of necessity be used in conjunction with the main engines in order that the latter may work economically, consume quite a large proportion of the total amount of steam generated, and that if these are also designed with a view to economy, the overall efficiency of the plant is thereby increased. And not only does the efficient design of the auxiliaries result in an economy in the use of steam, but it reacts also on the efficiency of the main engines themselves which operate more economically as a result of the auxiliaries more efficiently performing their duties.

The most important auxiliary is the condenser, and the advent of the steam turbine has done much to focus the attention of engineers on the question of the improvement of condensing systems, in consequence of the greatly increased economy obtained by allowing the steam to expand to a very low pressure in the turbine. This necessitates the creation of a high vacuum in the condenser, and in order to obtain as perfect a vacuum as possible, not only the condenser itself but the air pumps and circulating pumps used in conjunction with it, must be of the most efficient design.

The simple cylindrical condenser is gradually giving place to the pear-shaped or "uniflux" condenser in which, due to the area of the steam passage between the tubes diminishing towards the lower part of the condenser, a uniform velocity of steam flow is obtained, thus rendering all the tubes equally efficient; but it is indicative of the lack of unanimity amongst marine engineers upon the most important questions, that whilst in the now famous "North-East Coast Specification," the cylindrical condenser in conjunction with a steam jet vacuum augmenter is advocated, in some of the most recent geared-turbine vessels a pear-shaped condenser without any means of augmenting the vacuum is installed.

Turning next to the circulating and air pumps, it must be remembered that these, as well as other pumps, were until recently—and in many cases are even now—driven by means of a rocking lever from one of the crossheads of the main engines, and they were thus of necessity of a reciprocating pattern; but whilst it would appear that with the employment of turbines the circulating and air pumps, as well as all the other pumps, must be driven by independent engines, it is interesting to point out that in the case of the *Aurania* it has been found advantageous to instal a bilge and a sanitary pump driven from a crank fitted to the end of the gear wheel shaft. Whether this idea will be developed to include air pumps and circulating pumps remains to be seen. If, however, independent pumps are utilised, the question of a suitable type of engine must first of all be considered.

For the main engines, in view of its undoubted economy, the reciprocating engine is gradually being abandoned in favour of the turbine, and the question arises, will the turbine be further developed so as to become a suitable engine for driving the various forms of pumps. For slow moving reciprocating pumps, the answer will undoubtedly be in the negative, but for rotary air pumps and rotary circulating pumps one of the essential features of which is a high speed of rotation, the answer would be in the affirmative, provided an efficient form of turbine can be designed. There are at present two principal drawbacks to the employment of the turbine for this purpose; first, that the smaller size turbines have not proved themselves to be so efficient as the high-powered units, owing to the losses due to clearance becoming proportionally greater in the inverse ratio of the size; and second, that the turbine is not economical for varying powers, the efficiency falling away rapidly when the machine is run at other than the designed load; but for a constant load, such as will be found with air and circulating pumps on merchant vessels making long voyages, if an economical low-powered turbine can be designed, it would quickly displace the small high-speed reciprocating engine. In ships fitted with reciprocating engines, the tendency has, however, been gradually towards the substitution of independent units, and as a result the rotary or centrifugal circulating pump is gradually replacing the reciprocating pump, although from the point of view of efficiency of the condenser itself, it is doubtful whether the steady flow from the rotary pumps cools the tube surfaces so well as does the more interrupted flow from a reciprocating pump.

Air pump design still offers plenty of scope for the experimenter, and we are far indeed from having reached finality in this direction. The utilisation of a single air pump, with its suction at the bottom of the condenser, is a simple way of creating a moderate vacuum, but for a high vacuum such as is required with turbine engines, it is not sufficient; and therefore two pumps are often employed, one having its suction pipe connected in such a position that it serves to abstract the dry air and water vapour from the condenser, the suction of the other being, as is usual, at the bottom of the condenser. These two pump cylinders are often cast in one frame, and we then have the well known wet and dry or "dual type" of air pump. The rotary air pump, despite the undoubted success which has attended its use in connection with large turbo-generators on land, has not been used to any large extent in marine installations. This is rather difficult to understand, though it can perhaps be put down to the fact that with reciprocating engines it is the universal practice to drive the air pump from the low pressure crosshead, and although this is no longer possible with turbines, we still cling to the reciprocating form of pump; it must, however, be pointed out that the use of the rotary air pump presents one of the most efficient ways of creating a vacuum, it being no longer necessary to employ separate wet and dry air pumps, and in conjunction with either a steam or water jet as a vacuum augmenter it is possible to obtain a vacuum which approximates to within half an inch of the barometric height.

STATE CONTROL OF SHIPPING.

(From Our Own Correspondent.)

Shipowners are very seriously concerned over the position created by reason of State control. In Cardiff shipping circles it is viewed with great alarm. The Government insurance scheme, which became operative on August 19, has added another heavy burden on shipowners. One local company has taken the unprecedented action of deferring the payment of a dividend which they announced about a fortnight ago. Another Cardiff company has issued a circular to its shareholders wherein it is stated that the Government itself, by its requisitioned use of a steamer, made a profit, estimated at £40,000, on a voyage which took 126 days. Mr. J. C. Gould has issued a circular to the shareholders of the Griffiths-Lewis Steam Navigation Company in which he states that :—

"On the 9th inst. the managing director submitted to the board accounts made up to June 30 last, and recommended the payment of a further dividend of 7½ per cent. free of tax, on or about the 25th inst., on account of the period of trading from October 1, 1916, and this was approved by the full board. On the 14th inst. announcement was made by the Government of its intention to institute a new scheme for covering all British steamers against war risks, which scheme predicates serious loss to all cargo steamer companies ; the loss may either take the form of a heavy capital depreciation of requisitioned vessels or of heavy trading losses in respect of so-called 'free' ships. Under the new scheme, during the next six weeks your company is faced with heavier payments for insurances than the whole of the company's fleet has earned since September last, and we, therefore, consider it advisable to defer payment of this dividend until the situation has been met, as we hope it will be, by a reversal of the Government policy and removal of the heavy surcharge. Your company, fortunately, possesses five very fine steamers, the actual value of which, even at the present reduced price of tonnage, exceeds the capital of the company many times. In recommending the above course to be taken the directors have only had it in mind to enforce the strictest economy and preserve the cash resources of the company in view of the all too heavy enactments of the Government. Further communication will be made to you in due course. Very strong concerted action is being taken by all the cargo shipowners in this matter."

How the Government scheme is affecting their fleet is explained by Mr. J. C. Gould in the following circular :—

"It is impossible for the average individual to realise exactly what the new Government scheme of insurance in its connection with the control of shipping means. To the end that you may better understand, I have prepared the enclosed *pro forma* voyage statement, based on actual experience, showing what the new impositions mean to your company expressed in £ s. d. It should be borne in mind that the accounts make no allowance for depreciation (which is very heavy) or for interest on the capital investment. If in order to reduce the cost of the war risk insurance we reduce the insurable value of the vessel, in the event of a loss it is obvious that we should be unable to replace her. I shall be glad if you will bring the facts herein expressed to the attention of the member of Parliament for your constituency."

Pro forma of a voyage of a steamer of 6,400 tons d.w. from Bristol Channel to United States, thence to France to discharge, returning to Bristol Channel. Steamer valued at £120,000 on time charter as directed by Controller of Shipping. :—

	£ s. d.	£ s. d.
Voyage occupied 56 days—		
Hire for the period, gross		13,846 0 0
Commissions on charter	969 1 0	
Wages, provisions, stores, &c.	1,785 15 0	
Marine insurances for period	1,300 0 0	
War risk insurances at 5 per cent. for 91 days, plus calls, estimated at further 4 per cent. for 91 days	6,646 0 0	
		10,700 16 0
Gross profit		3,145 4 0

Similar voyage to be carried out under new insurance scheme :—

	£ s. d.	£ s. d.
Hire for period, gross		13,846 0 0
Commissions on charter	969 1 0	
Wages, provisions, stores, &c.	1,785 15 0	
Marine insurances	1,300 0 0	
War risk insurances : 9 per cent. for trip to United States, 9 per cent. from United States to France, 5½ per cent. from France to Bristol Channel 23½ per cent. actual	28,200 0 0	
Loss		18,408 16 0
	32,254 16 0	32,254 16 0

Another circular has been issued by Mr. Charles Radcliffe to the shareholders of the Snowdon Steamship Company, which contains some remarkable statements :—

Vienna Chambers,
Bute Docks, Cardiff,
August 24, 1917.

To the Shareholders of the "Snowdon" Steamship Company, Ltd.

Ladies and Gentlemen,

Since our last annual balance sheet to you, we beg to inform you as follows :—

The "Snowdon" Steamship Company, Ltd., has had to pay as excess profits duty to the Government, £10,461 8s. ; the survey which the *Snowdon* had to undergo in the spring cost no less than £8,595 9s. 1d., making a total of £19,056 17s. 1d., which has completely denuded the company of all cash reserves ; she was 68 days undergoing her survey, during which period she was of course off hire from Admiralty.

She sailed from Cardiff, under Admiralty orders, on April 14, and concluded her voyage at Hull on August 13, being 126 days over the trip, at a monthly hire of £1,753 19s., or a total of £7,265, out of which we have had to pay wages, provisions, stores and marine insurance, which has involved the company in a loss of £1,162 17s. for the period.

We wish to draw your attention to the other side of the picture, and that is, how the Admiralty employed the vessel during her requisition period.

They loaded her at Cardiff with about 4,000 tons of coal for Monte Video, in South America. There was no freight inserted in bill of lading, which was a dummy one, but we have ascertained from the leading South American coal merchants in Cardiff that the freight ruling on that date was £6 per ton, which would give the Government the sum of £23,520, after allowing 2 per cent. for shortage of cargo. After discharging her cargo at Monte Video she proceeded to Rosario, and there loaded a cargo of maize for Hull at a bill of lading rate of freight of 150s. 6d. per ton of 20 cwt., delivered. At Hull she turned out 4,607 tons, so that the Government would receive freight on that cargo of £34,667 13s., making a total on the round of £58,187 13s.

We have made a careful estimate of what the cost to the Government on this voyage was and calculate it leaves them with a profit of about £40,000. We may, however, state that as the *Snowdon* received a very quick turn in South America the Government would probably have to pay dispatch money, but this would not lessen their profits at the most by more than £2,000.

There are 92 individual shareholders in this company, and they will note that while the Government has involved a loss on the company, it has utilised their private property to make this large profit.

The facts speak for themselves ; we doubt if the Government are right in so dealing with your property. The Royal Proclamation of August 3, 1914, authorising the requisition of ships recites that a large number of vessels are required for use as transports and as auxiliaries for the convenience of the fleet and for other similar services, but we do not think that the Proclamation justifies the use of your steamship for trading purposes and for the carrying on by the Government of the business which your company was incorporated to carry on.

The war involves burdens upon the community, but they should be borne equally by all. There is no justification why the shipping industry, which is the greatest industry of our Empire, should be signalled out for any special attack, and to us, the attitude of the Government towards shipping is quite inexplicable.

At the commencement of war the Government was fortunate in being able to lay its hands on a vast Mercantile Fleet which the industry of private citizens had built up by their own efforts without a particle of assistance from any Government, and without which the Government would never have been able to prosecute the war.

This vast Mercantile Marine enabled the Government to supply our Fleets with coals, &c., and also to place tonnage at the disposal of Russia, France, and later on, Italy, to carry the vast munitions of war supplied from America, and without which it would have been impossible for the Allies to have withstood the foe.

And what does shipping get in return ? It is commandeered by the Government at Blue Book rates, viz., 6s. 6d. per ton on the deadweight—not sufficient to pay the charges which shipowners have to meet ; and in some instances they trade with this private property of shipping shareholders and make vast sums of money thereby.

Furthermore, the Government has chartered neutral tonnage, paying for such tonnage in some cases as much as eight times the Blue Book rate. Neutral tonnage, we may state, is only able to trade because our Fleets keep the seas open. There is therefore no reason why the Government should give them preferential treatment over our shipping. Neutrals are making vast sums on our backs which they will utilise in competition with us later on when the war is over and British shipping will have no reserves with which to make headway for the losses which the war has entailed.

We are astonished that the Government and that Parliament can be so blind as to what the future of shipping means to this country, for if once our shipping supremacy is taken from us, then our foreign trade is bound to suffer, and the manufacturers of goods in this country will find to their cost that they have to employ foreign tonnage for the transport of their goods in competition with manufacturers in foreign countries.

There must be hundreds of thousands of shipping investors in this country ; and it should be their duty to acquaint each member of their particular constituency of what shipping means to this country.

Yours faithfully,
Charles Radcliffe & Co.

SCREW PROPELLERS.

(*Continued from page* 84.)

Whilst the guidance obtained from actual trial results on ships may be of great help in the further design of hulls and screws, the number of variables are so great in many cases, that such guidance may be restricted in application. It was therefore soon discovered that some exhaustive experiments on screws of all possible pitches and areas were necessary to find how the thrust potentialities and efficiencies were affected thereby. In this field of investigation many experimenters have been at work—Griffiths, Rennie, Blechynden, Thornycroft, Froude, Durand, Taylor, Parsons, and Curtis & Hewins, have all found it an interesting sphere of labour. The widest schemes of experiment have been undertaken by Froude and Taylor, and with these names in particular, experimental work on model screws is most closely associated.

Froude's Propositions.

In 1886, Mr. R. E. Froude read a paper on "The Determination of the Most Suitable Dimensions for Screw Propellers," before the Institution of Naval Architects. The screws used by Froude were 8·16 in. in diameter, elliptical in form. Two, three, and four bladed screws were tried, and with the four-bladed screws pitch ratios of 1·22, 1·4, 1·8, and 2·2 were investigated. The results obtained have been supplanted by those given in Froude's 1908 paper entitled "Results of Further Model Screw Propeller Experiments"; accordingly little reference need be made to the earlier paper. In it, however, five propositions were made which are the foundation of experimental work. These are as follows :—

Prop. 1.—The performance of any given screw advancing at any given speed through the water and turning at various numbers of revolutions per minute (in other words, working with various degrees

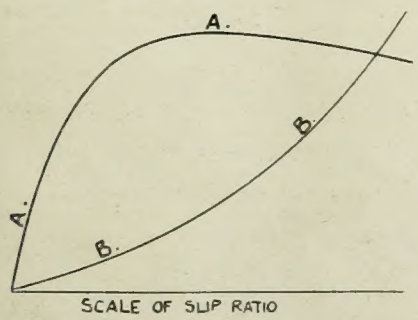


Fig. 7.—Curves showing the Relation of Thrust and Propeller Efficiency to Slip Ratio.

of slip ratio) may be represented by a diagram where the abscissæ indicates values of slip ratio, the ordinates of the curve B.B. the corresponding thrusts, and those of the curve A.A., the corresponding efficiencies. (Fig. 7.)

Prop. 2.—With given slip ratio, the thrust of a given screw varies as the square of the speed of advance through the water.

Prop. 3.—With given slip ratio, and given speed of advance, and with given design of screw and varying size the thrust varies as the square of the dimensions of the screws.

Prop. 4.—With given slip ratio and given design of screw, the efficiency is unaffected by variations of speed or size of screw.

Prop. 5.—(Consequent upon the four preceding.) A single diagram such as that in Fig. 7 will represent the performance of any number of screws of given design, but of differing sizes, advancing at any variety of speeds through the water, if the ordinates of the thrust curve are taken to represent not thrust simply, but values of the expression $\frac{T}{D^2 V_1^2}$, where T = thrust, D = diameter of screw, and V_1 = speed of advance through the water.

Taylor's 1904 Experiments.

Four years before Froude presented the results of his more comprehensive scheme of experiments, the famous Superintendent of the Washington Tank, Naval Constructor (now Rear-Admiral) D. W. Taylor, gave a valuable paper on this subject to the American Society of Naval Architects and Marine Engineers. This paper was entitled "Some recent Experiments at the U.S. Model Basin."

The primary object of the experiments was the determination of the power and efficiency of model propellers of the ordinary *three*-bladed type, throughout the range of pitch ratio and blade area likely to be encountered in practice. The series of experiments covered 30 model propellers. They were all 16 in. in diameter, three bladed, of uniform pitch, and very thin. The pitch ratio range was from ·4 to 1·5, and the disc areas experimented upon were five in number ranging from ·12 or ·56 D.A.R.

Experience has shown that the results presented would have been of even greater use had the very low limits of pitch and disc area

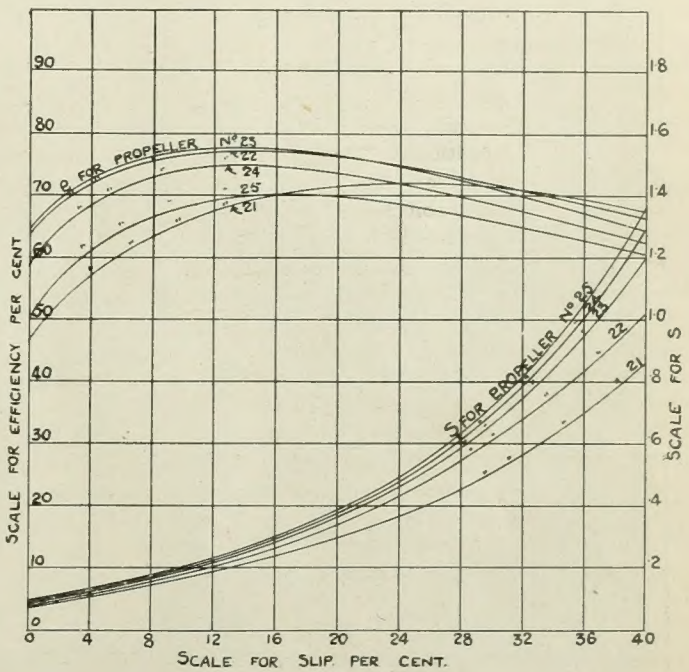


Fig. 8.—Taylor's Curves of Propeller Efficiency (E), and Power Co-efficient (S).

ratios been omitted and screws of greater pitch and disc area ratios been included in the scheme.

Taylor presented the results in curves of efficiency and of a power co-efficient which he designated S. If P denote the horse-power absorbed by a propeller, D the diameter of the propeller in feet, and V the speed of advance of the propeller in knots, then $P = ·009365\ SD^2V^3$.

Accordingly curves of E, or efficiency, and of S, completely characterise a given model propeller. Fig. 8 is taken from Taylor's paper and shows the method of presentation adopted.

Explanation of curves.—It was found from experience, that for purposes of design it would be highly advantageous to plot afresh Taylor's results on a base of pitch ratios for certain definite disc area ratios. Accordingly the curves now presented were constructed for ·3, ·4, ·5, and ·6 disc area ratios. (Figs. 9, 10, 11, 12.) Several important points may be observed from an inspection of these. (1) With decrease in pitch ratio the power absorbed rapidly increases at a certain definite slip. (2) Decrease in efficiency accompanies decrease in pitch ratio, the maximum efficiency being given by

FIGURE 9

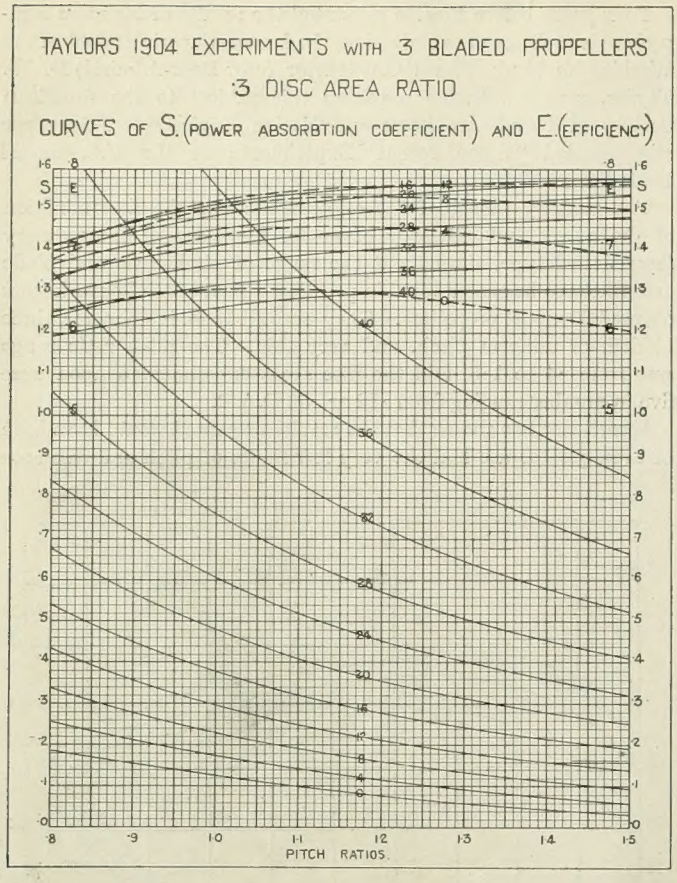

TAYLORS 1904 EXPERIMENTS WITH 3 BLADED PROPELLERS
·3 DISC AREA RATIO
CURVES OF S. (POWER ABSORBTION COEFFICIENT) AND E. (EFFICIENCY)
PITCH RATIOS.

FIGURE 10

FIGURE 11

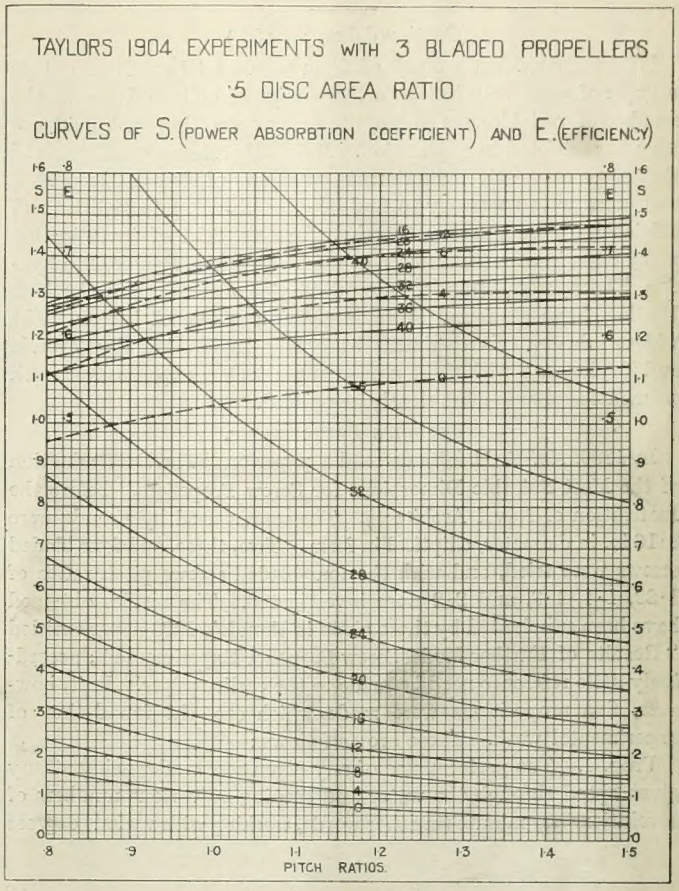
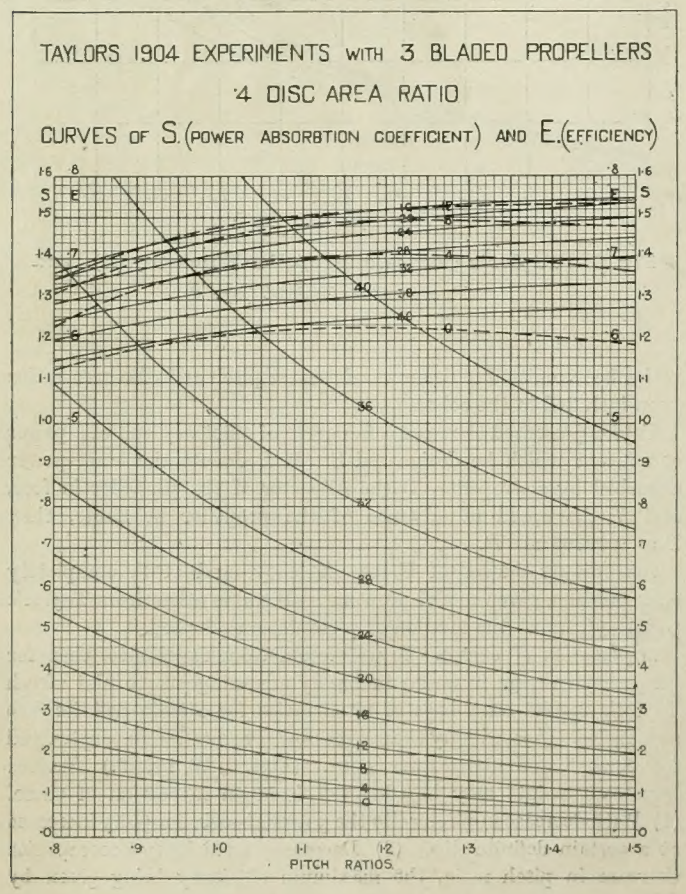
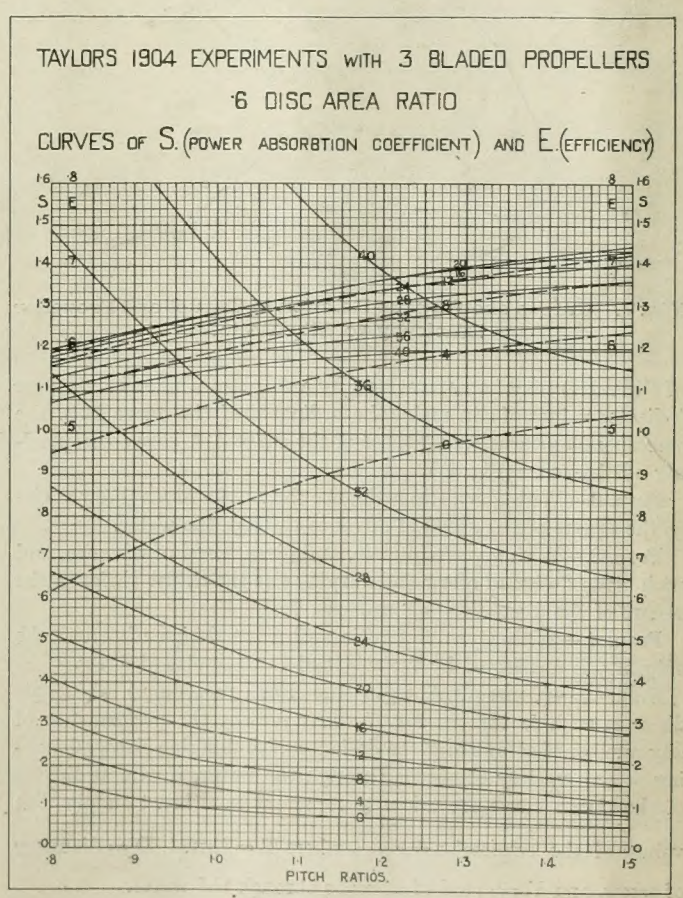

TAYLORS 1904 EXPERIMENTS WITH 3 BLADED PROPELLERS
·5 DISC AREA RATIO
CURVES OF S. (POWER ABSORBTION COEFFICIENT) AND E. (EFFICIENCY)
PITCH RATIOS.

FIGURE 12


TAYLORS 1904 EXPERIMENTS WITH 3 BLADED PROPELLERS
·4 DISC AREA RATIO
CURVES OF S. (POWER ABSORBTION COEFFICIENT) AND E. (EFFICIENCY)
PITCH RATIOS.


TAYLORS 1904 EXPERIMENTS WITH 3 BLADED PROPELLERS
·6 DISC AREA RATIO
CURVES OF S. (POWER ABSORBTION COEFFICIENT) AND E. (EFFICIENCY)
PITCH RATIOS.

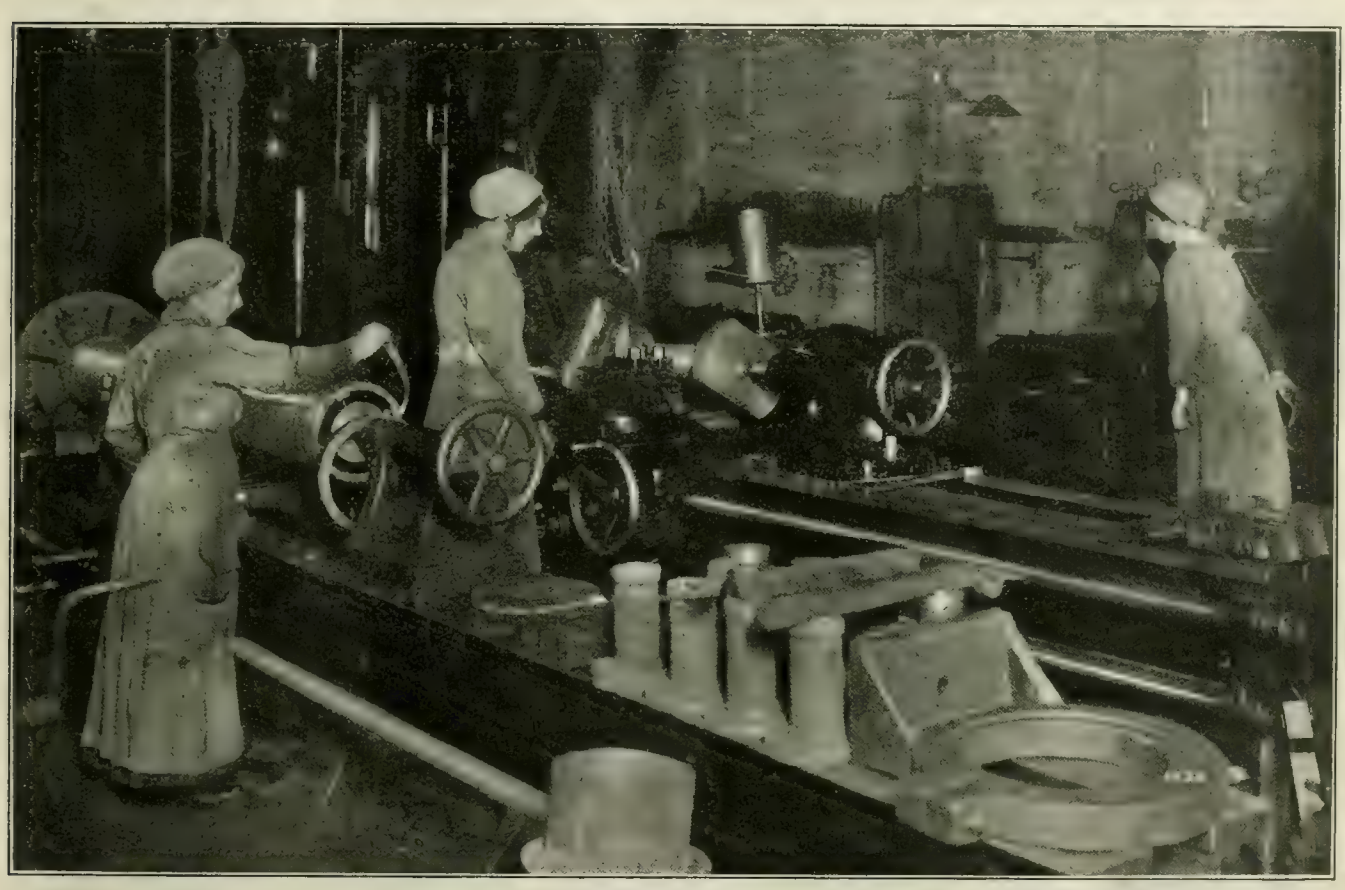
propellers of small disc area ratio, of 1·5 pitch ratio working at about 12 per cent. real slip; (this, by the way, is almost impossible to achieve in actual practice). (3) Increase in disc area ratio brings with it a decrease in efficiency. In this connection it is of importance to observe that screws of high pitch ratio seem to be less affected in efficiency by increase in area than do those of smaller pitch ratio. (4) Increase in disc area ratio has comparatively little effect on the S value, except at high slip ratios.

These curves then show the potentialities of three-bladed model screws of wide variation in pitch and area ratio, and, if the law of comparison holds, of full-sized screws also. It should, therefore, be possible to forecast the performance of any full-sized propellers from these model results, and also to determine the dimensions of the particular screws which will fulfil stipulated conditions of power, speed, and revolutions.

(To be continued.)

EMPLOYMENT OF WOMEN IN MARINE ENGINEERING SHOPS.

We are enabled to publish this week, by special permission of the Ministry of Munitions, some photographs illustrating some of the activities of the marine engineering shops of the country in which women are now being employed. The first illustration below shows women in charge of lathes, the woman on the left turning a propeller shaft liner, and the woman in the centre turning a marine connecting rod. A woman operating a planing machine is also shown. The next two photographs, on page 226, depict women occupied in the erection of condensers, the top photograph showing the placing of the grummets and entering the ferrules on a pear-shaped condenser, and the lower photograph shows women occupied in inserting and packing tubes in a cylindrical condenser.



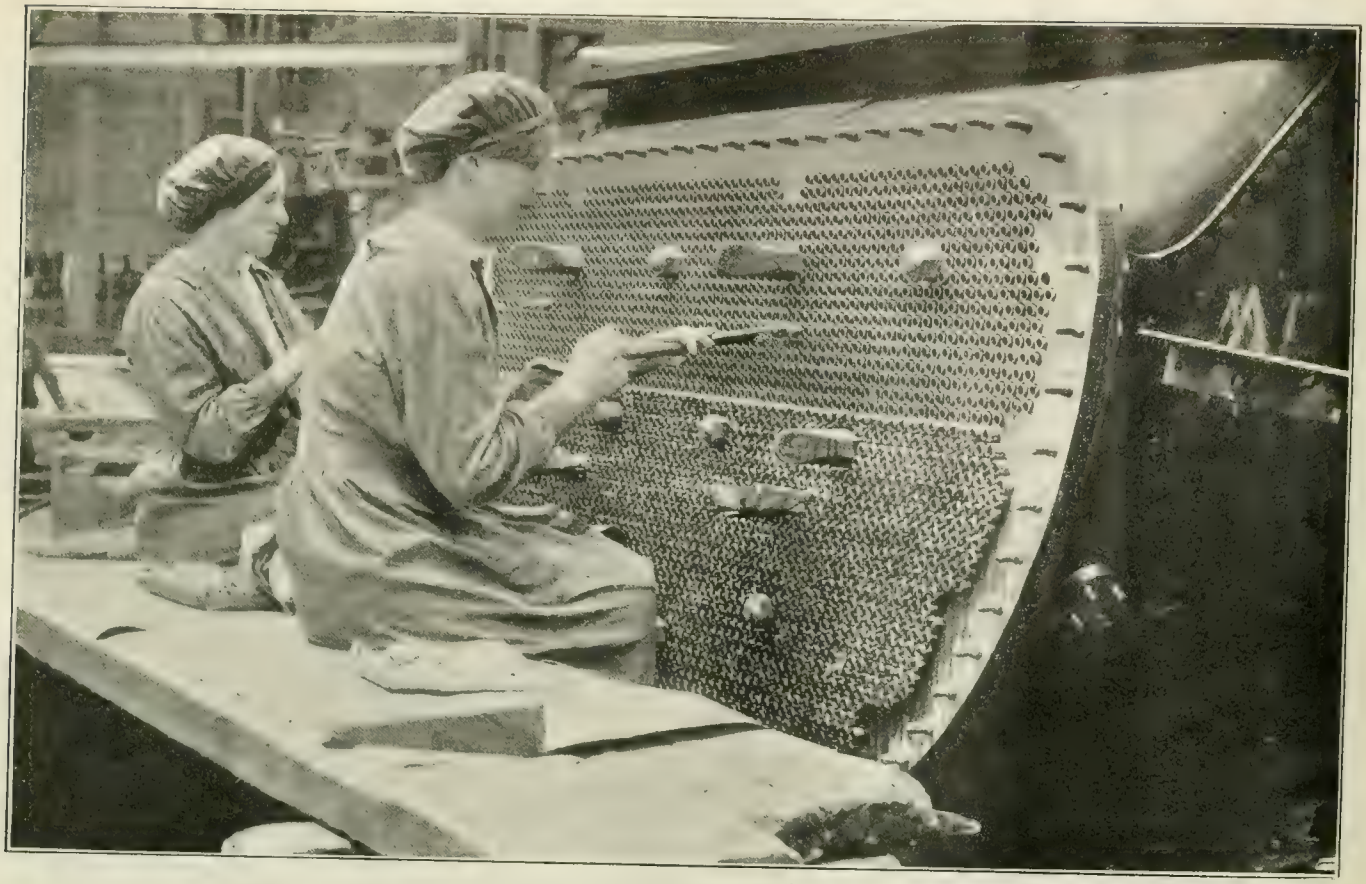
Woman on the left, turning a propeller shaft liner; in the centre, turning a connecting rod for marine engine; on the right, planing a steel test piece.

(Published by special permission of the Ministry of Munitions.)

These photographs are not only illustrative of the various processes depicted, they show also the revolution which the war has caused in the personnel of our machine shops. It would have appeared incredible before the war that women would ever find occupation in marine engineering shops, and especially that they would become sufficiently skilled for jobs such as these; and it is interesting to speculate as to whether after the war we shall revert to the old conditions.

200-Ton Iron and Concrete Ship.—The Christiania correspondent of the *Times* reports that the first Norwegian iron and concrete ship was launched on August 20 at the Porsgrund Cement Works in the presence of the Prime Minister, M. Knudsen. The ship is built on an entirely new system, with the bottom upwards, in which extraordinary position the launching took place on a sort of underlying sledge, which glided out with the ship. When the water was reached the hull became detached from the sledge and gradually sank up to a certain point, then subsequently slowly righted itself. This particular ship, which is of 200 tons burden, was built in three weeks, but the next one will only require about half that time, as the original frame will be used for each subsequent ship of the same size. The casting of the ship, when the frame is completed, will this time take only two days. It is intended to start the wholesale building of iron and concrete ships of 200, 500 and 1,000 tons. A 1,000-ton ship will be completed in six weeks.

Canada-West Indies.—For the present it has been decided not to interfere with the steamship service between Canada and the West Indies, or to take any vessels off the route. A new contract, the present being held by the Royal Mail Steam Packet Company, will soon have to be made.



Women placing Grummet in Position, and entering Ferrules in Condenser.

Women Inserting and Packing Tubes in Condensers. (*See page 225.*)

(Published by special permission of the Ministry of Munitions.)

THE MAINTENANCE OF THE BRITISH MERCANTILE MARINE.

Report of the Joint Committee appointed by the Chamber of Shipping of the United Kingdom and Liverpool Steam Ship Owners' Association to advise as to the Measures requisite for the Maintenance of the British Mercantile Marine.

It will be within the recollection of our readers that a committee was appointed in March of last year by the Chamber of Shipping of the United Kingdom and the Liverpool Steam Ship Owners' Association to advise as to the measures requisite for the maintenance of a British Mercantile Marine adequate to the Empire's interests in peace as well as its needs in war. The following were the members of the Committee :—

Mr. W. H. Raeburn (President Chamber of Shipping), Mr. J. Herbert Scrutton (Vice-President, Chamber of Shipping), Mr. G. H. Melly (Chairman, Liverpool Steam Ship Owners' Association, 1916-17), Sir Kenneth S. Anderson, K.C.M.G., Sir Percy E. Bates, Bart., Mr. F. C. Gardiner, Mr. T. F. Harrison, Sir Norman Hill, Captain H. B. Hooper, the Right Hon. Lord Inchcape, G.C.M.G., K.C.S.I., K.C.I.E., Mr. W. W. Jones, Mr. F. W. Lewis, Sir James Mills, K.C.M.G., Sir Owen Philipps, K.C.M.G., Mr. Harold A. Sanderson, and Mr. Arthur Scholefield. In a note to the report it is stated that "Mr. F. C. Gardiner, having been unable to attend the meetings, retired from the Committee. Lord Inchcape, having been unable to attend the meetings of the Committee, Mr. I. M. Shields attended in his place." The report was not signed by Sir Owen Philipps.

The Committee, while bearing in mind the terms of reference, emphasise in their report that they are British shipowners advising British shipowners as to the trade policy best calculated to promote the welfare of the British shipping industry. They fully realise, and are convinced that the British shipowners generally fully realise, that important as is that industry to the Nation and the Empire, there are national and Imperial considerations of deeper and greater importance than its prosperity. In putting forward the British shipowners' case fully and frankly it is not their object to suggest that British shipowners should support any policy which would best secure their own prosperity at the expense of the Nation and of the Empire as a whole. The only sure foundation for the future success of the British Mercantile Marine must be the safety and the prosperity of the Nation as a whole, and the policy to be adopted must be that which is best calculated to attain that end whatever may be the disadvantages it imposes on British shipping.

When war was declared, nearly one-half of the merchant shipping of the world belonged to the United Kingdom, but even with that tonnage at our command it has not been possible to satisfy the demands made on our shipping by the Empire and its Allies. The problem of the maintenance and development of the British Mercantile Marine therefore raises wide issues, involving not only the trade of the United Kingdom and the British Empire, but also the oversea trade of foreign countries. In the course of their enquiry the Committee have had always in mind the paramount duty of the Allies, namely, to obtain from the enemy guarantees for the future peace of the world, and redress for the lives and the material resources which have been destroyed. The destroyed ships of the Allies must be replaced without delay from the enemy's resources. Of necessity this redress will have to be provided, in part, by the transfer of the enemy's ships, as they are a form of wealth which can be readily transferred ; but this is not merely a shipowner's question, and the policy is not limited to the taking of "ton for ton" of the ships destroyed. It is the policy of retribution for crimes against humanity.

The report runs to two volumes with numerous charts and tables. The conclusions of the Committee occupy the first 29 pages. We cannot, in the space at our disposal, do full justice to all the points brought forward. We confine ourselves, therefore, to giving the "suggestions" of the Committee in regard to purely shipping questions. In the near future we hope to deal with some of the other outstanding portions of the report.

In regard to purely shipping questions the Committee submit the following suggestions.

State Control and Standard Ships.

It would in their opinion be a disaster to substitute the principle of State responsibility for the general design in building and equipment of our vessels, for the principle of the individual responsibility of the shipowner. By placing the responsibility on the shipowners our Mercantile Marine has grown as that of no other nation has grown, and safety of life and property at sea has increased in a marked degree. State control can only be worked on the basis of standards, and the danger of the establishment of a standard is that it crystallises methods which are capable of improvement. A standard must be established in the light of past experience, and, at the best, it can only represent the most approved methods then in use, but the skill of the naval architect, of the shipbuilder, and of the engineer, are devoted unceasingly to improvements on established methods. In looking back on the developments of even only the last 10 years, and still more on those of the last 60 years, there has never been a period at which any part of the hull or equipment of a ship could, in the interests of safety, have been standardised. Improvements and developments both in material and form of construction have been and are still being introduced from year to year. The experience of the past is of the greatest value, but mainly as a guide to the direction in which further improvements can be made.

Whilst imposing individual responsibility on the shipowner, the State must exercise a general supervision through its surveyors and officers at every port, over the condition in which the vessels are sent to sea. This is a police power, and to make it effective it is only necessary to have a sufficient number of surveyors fully qualified to detect and prevent the sending to sea of vessels which are in an unseaworthy state. It is no more necessary to have every vessel examined and passed by State officials on every voyage, than it is necessary for the maintenance of order in our streets for every citizen to obtain a police passport testifying to his honesty or sobriety. The State must further have full powers to investigate into the nature and causes of any accident or damage which a ship has sustained or caused. Such powers are necessary to detect not only the man who is intentionally risking the lives or property of others, but also the reckless and careless. The exercise of these powers is one of the best checks there can be on dishonesty, as well as one of the best means that can be devised for the maintenance of a high standard of care and discipline.

In the ports of the United Kingdom, the State now exercises an effectual supervision over all vessels under the British flag. Under the Merchant Shipping Act of 1906, vessels under other flags were, in great measure, brought under this supervision whilst in ports of the United Kingdom. If in the interests of our foreign commerce as a whole, our ports are left, as the Committee think they should be left, free to vessels under all flags, all such vessels must be subject to the same supervision. In the exercise of this supervision the State officials must, no doubt, be guided by certain standards and instructions, but these should be framed so as to allow free scope for the skill and enterprise of the shipowners, upon whom the direct responsibility should rest ; and the State must recognise that a Mercantile Marine can only exist so long as it is able to pay its way. Conditions imposed upon British vessels which preclude their successful commercial employment, defeat their own end, for ships complying with those conditions will never exist, and their place will be taken in the trade of the world by vessels under other flags, upon which such conditions are not imposed. It is of the first importance that the conditions should be not only reasonable in themselves, but also adopted *internationally*.

International Safety Regulations.

Until these regulations are established and enforced internationally, equal protection should be secured throughout the voyage for all passengers travelling from or to our ports on both British and foreign

vessels. The adequacy of the protection on many points (boats, life belts, &c.) depends on the total number on board, and therefore foreign vessels carrying passengers from or to this country should be placed under the same restrictions as British ships in regard to the numbers carried on every stage of the voyage including passages between foreign ports.

The British Load Line Regulations should be enforced throughout the voyage on foreign ships trading with this country, and not only on such vessels whilst in our ports. As the law now stands, a foreign vessel can start on a voyage to this country over-loaded to the extent of the weight of coal used on the voyage.

Of the shipping tonnage under the British flag upwards of 90 per cent. is owned in the United Kingdom, and this is the tonnage by which almost the whole of the oversea trade within the Empire is carried. The vessels owned in the Dominions are employed mainly in the coasting trades of those Dominions. It is neither necessary nor expedient for a Dominion to impose standards other than those adopted by the United Kingdom. If our standards are not sufficient they should be amended; but the standard should be the same in all ports of the Empire. It is only by enforcing such uniform standards that the shipping of the Empire can be made available in all ports of the Empire.

State Services.

Apart from the control exercised by the State to secure safety, every proposal under which the British Mercantile Marine is called on to render special services to the State, must be judged and justified on strictly business lines, whether the proposal is for the training of men for the Royal Navy, or for providing employment for more men of British nationality, or for improving or cheapening oversea transport. If the rendering of the services required offers corresponding business advantages to the industry, the State may rely on the shipowners performing those services without further payment, and without compulsion. If they do not confer such advantages, their imposition under the authority of the State is in fact the imposition of a special tax on the shipping industry.

Ocean Freights.

At the Paris Conference the Allies undertook to adopt, amongst other steps, measures for facilitating their mutual trade relations by the establishment of direct sea transport services at low rates.

A Mercantile Marine can only be maintained so long as the return obtained from the capital invested in the ships is reasonable in itself, and compares not unfavourably with the return obtained from capital invested in other mercantile ventures. The life of the ship is limited, and therefore this return must show not only a reasonable annual profit, but also provide, within that life, for the replacement of the ship. If freights do not show such a return, shipbuilding falls off, until the tonnage becomes insufficient to provide for the growing trade of the world, and then freights rise and ships are built until again the tonnage available exceeds the requirements of the trade offering. The wasting character of an investment in shipping, its profit earning power, or the want of such power, affects the amount of capital, and therefore the total tonnage employed in the industry, very quickly; far more quickly than the want of earning power affects the capital employed in, and therefore the productive power of, industries in which the assets are of a more permanent character. The progress of the British Mercantile Marine has from this cause ebbed and flowed with great regularity, and if freights had remained at the level at which they were between 1904 and 1910 we should undoubtedly have had to face the war with a substantially smaller, older and less efficient merchant service.

The return obtained from the capital invested in shipping depends on the extent to which the carrying power of the ship is used. If both outward and homeward cargoes can be obtained, the carrying power is being used to the utmost, and each cargo pays only for the time for which it has occupied the ship; but if either the outward or the homeward voyage has to be in ballast the waste of carrying power can only be made good by one cargo paying for the time occupied by the round voyage. Again, if a nation excludes from its coasting trade the vessels under foreign flags which it employs to carry either its foreign exports or imports, the freights must cover the carrying power lost in moving from one to another of that nation's ports in ballast, or with only part cargoes. Again, a nation which levies *ad valorem* import duties averaging, for example, 20 per cent., can never hope to encourage its import trade by obtaining reductions in freight which average from 1 to 2 per cent. on the values of the cargoes carried. Again, a ship spends, on the average, half of her time in port loading or discharging cargo, and all unnecessary detention represents loss of carrying power for which the cargo must pay.

It is only by dealing with points such as these that rapid sea transport at low rates can be obtained. The nation or port that wants low rates on its exports, must be ready to welcome imports, as otherwise the freights on its exports must cover the cost of the outward ballast voyage. Further, it must provide harbours and docks to accommodate the vessels of the size which can best perform the service required, and it must deal promptly with the loading and discharge of the cargoes. The ports are the *neck of the bottle* through which all international oversea trade must pass, and sea transport can be only rapid and cheap so long as the traffic is flowing freely.

State restriction or regulation of freights raises questions of the greatest difficulty. There is no analogy between the railway company and the shipowner. The railway company, if not protected under an actual monopoly conferred by the State, is in fact by its geographical position, and by the enormous capital represented by its undertaking, guaranteed the carrying of the traffic of a definite area. In exchange for these advantages it is reasonable to impose on the railway company maximum rates. The shipowner has no such advantages or guarantees; the ports are open to all ships under all flags, and the ocean freights are fixed from season to season in relation to the carrying power available and the volume of cargoes to be carried. If freights in any trade advance, tonnage is immediately attracted from other trades. If the regular lines unduly force up their charges, the cargo owners are free to own or charter ships on their own account. As the railway company approaches nearest to the position of a monopolist, so is the shipowner of all trades the furthest removed from such a position; there is, in fact, no other industry exposed to such keen and direct competition from the world at large.

If freights are not to be fixed by business bargains made by business men, then it will be necessary to regulate not only the freight to be charged, but also the amount and character of the cargo to be shipped at that rate. It would be clearly impossible to compel the ship to accept the same freight per ton for bringing a half cargo as for a full cargo, for the cost of the voyage and the amount of capital employed, as represented by the ship, would be the same in both cases. It would be clearly impossible to compel a ship to accept the same homeward rate of freight if the outward voyage had to be made in ballast as was paid to the ship which carried both an outward and homeward cargo. But although the State, by an arbitrary act, might fix the freights, it could not guarantee the shipment of full, or indeed of any, cargoes at those rates, even from the ports of this country and far less from foreign ports. The only manner in which the State could give any security that the shipowner would be employed, would be by fixing the number of ships to be loaded in relation to the probable total amount of cargo offering. But, looking back on the constantly growing trade of the world, it would have been folly for the State to have ever attempted to limit ocean carrying to a fixed number of ships at fixed rates of freight. It is only by leaving its ports open that the nation can get the full benefit of the enterprise of the shipowners and shipbuilders of the world; and free and open competition is the best possible guarantee of good service at reasonable rates. The State which foregoes these advantages must be at a disadvantage in all international commerce.

Conditions of Ocean Carriage.

Very similar considerations arise in regard to State regulation of the conditions under which cargoes are to be carried.

There are two ways in which the relation between the shipowner and the cargo owner can be defined:—

First, the shipowner can assume the position of both carrier and underwriter, and make himself responsible to carry and deliver the goods in safety, answering for all loss or damage which may happen to them while they are in his hands, or

Second, the shipowner can offer his services to the merchant on the understanding that he (the shipowner) will use all due diligence in carrying and delivering the goods, but will assume no financial responsibility if the goods are lost or destroyed.

As a mere carrier, the shipowner is content to be paid according to the weight or bulk of the goods; but if he is to assume responsibility for their safe delivery, then he must in addition be paid, as an underwriter, on the value. The extent of the liability to be assumed by the shipowner involves no question of principle, and, speaking generally, the shipowners are ready to undertake any duties and to assume any responsibilities for which they are adequately paid. The real question is whether it is good business to force the shipowner

by State regulations to assume responsibility for the safe delivery of the goods.

From the cargo owner's point of view, the question is whether he can obtain by bargain or State regulation as favourable terms and as good security from the shipowner as from the underwriter. The now established course of business is for the shipowner to fix his freight on the basis of his using all due diligence in the carriage and delivery of the goods, but assuming no financial responsibility if they are lost or destroyed, and for the cargo owner to insure those risks in the open insurance market. A bargain giving effect to this course of business is sanctioned by the laws of the United Kingdom.

Such a bargain does not entitle or enable the shipowner to assume a position of indifference in regard to the care of the goods. His success depends on his satisfying his customers, and he can only give satisfaction by carrying the goods safely.

Agencies for British Ships in Foreign Countries.

Notwithstanding obvious advantages, the Committee do not think it would be possible to continue, under peace conditions, the practice that has been introduced to meet war conditions, of limiting the agencies for British ships to persons of British nationality. In international commerce it is impossible to exclude foreigners from active participation at, at least, one end of the voyage.

Discipline in the Merchant Service.

The State should recognise that neglect or failure on the part of a seaman to perform the duties he has undertaken to discharge is an offence against the State, and not merely a breach of the contract entered into by him with his immediate employer. Such neglect or failure imperils the lives of all on board. In recent years Parliament has whittled away penalties which were imposed under the old Merchant Shipping Acts to enforce discipline, and the police authorities have left to the employer the duty of prosecuting in all cases in which there has been neglect or failure of duty on the part of the men. All this should be altered, and neglect or failure of duty on the part of the crew should be dealt with in the same way as reckless driving in the streets, or any other offence which imperils the safety of life.

Training of Boys for the Sea.

To maintain the British Merchant Service provision has to be made for about 9,000 young men and lads joining each year, the average term of service at sea being about 15 years. The conditions of service and pay compare favourably with those on shore, but there stands in the way of the lad desirous of going to sea the difficulty of obtaining any preliminary training. The actual cost of the keep of a lad at sea is from 7s. to 10s. 6d. a week, a sum which is, in itself, in excess of the wages paid on shore to one who is learning his trade. Moreover, the shipowner must not only feed the lad, but also, if he is to keep him, pay him wages, because it is only by wages that he can be retained after he has obtained any experience. Having regard to the Nation's absolute dependence on its Mercantile Marine, the training for seamanship should be recognised as a paramount national duty. The shipowners are ready to find the opportunities for the training, but it is only just that the cost should be shared by the country at large. The public authorities now interested in finding suitable employment for boys should recognise and fulfil this National duty.

Taxation of Shipping Profits.

The Nation has failed to realise the gravity of the war wastage on British shipping. Whilst every other maritime nation is doing its utmost to encourage private enterprise, the United Kingdom, which is dependent for its existence on its Mercantile Marine, has by requisition and taxation deprived its shipowners of the means of maintaining their fleets. There is a most urgent national necessity for building at war prices, although it is manifest that it will be impossible under peace conditions to cover the depreciation, and earn a return, on the capital represented by such prices. The additional war cost of building should be met, and written off, out of the war earnings of the ships. It will not be possible for some time after peace is restored to estimate the amount by which the war cost has exceeded the normal cost, but until this difference can be ascertained the shipowner should be allowed to retain and set apart out of the earnings of his ships a sufficient sum to cover the difference whatever it may be, but on the footing of the sum so set apart being accounted for when the difference can be assessed. Under normal conditions in the assessment of shipowners' profits for the purposes of taxation, sufficient depreciation should always be allowed to cover fully the replacement of the ship. The present rate, which is calculated at 4 per cent. per annum on the original cost of the shipping, is inadequate. It should be increased to 5 per cent. per annum.

Railway Competition with Shipping.

The Committee are of opinion that steps should be taken to protect the shipowners engaged in the Coasting and Home Trades from unfair competition on the part of the railway companies. Shipping business if undertaken by a railway company should be carried on as a separate and self-supporting undertaking. It should not be possible for any railway company to run its steamship services in competition with other shipping at a loss which is recouped by the inland charges imposed by that railway company.

An International Basis of Limitation of Liability.

The importance of having the rights and liabilities of those engaged in the oversea trade of the world, whether as the owners or the insurers of the ships or of their cargoes, in the event of the vessels in which they are interested meeting with disaster, regulated by a common international code of laws, has long been recognised. In recent years such codes have been adopted internationally in regard to collisions and assistance and salvage at sea. Before the war a third code, dealing with limitation of liability, had been drafted and practically agreed between the nations, including Great Britain. It is most necessary that this third code should be adopted by Great Britain without delay, and without waiting for action on the part of the other nations. It is only by adopting this course that British ships can be placed on an equality with foreign ships in foreign ports.

Passenger Claims.

In the interests of both the shipowner and of the passenger the rights and liabilities of each should be established by international agreement. Claims arising from death or personal injury must now, under the laws of all nations, be founded on negligence, and to support such claims it is not only necessary for the claimant to prove that the injury resulted from negligence, but also that the person against whom the claim is made is responsible for the action of those who were guilty of the negligence. It appears to the Committee that what the passengers require is insurance against accident. What the shipowner wants to know is with certainty the extent of the liability he assumes in exchange for the passage money he receives. This is a question which, the Committee think, should be enquired into and reported upon, with the view to the adoption, internationally, of a scheme based on the payment of fixed sums for every death or personal injury resulting, on a disaster, either from negligence or any other cause.

The Sale of British Ships to Foreigners.

In view of the war wastage to which the British Mercantile Marine has been subjected, we are of opinion that in the National interest the existing prohibition against the transfer of British ships to foreigners should be continued for a fixed period, which should not be less than five years after the termination of the war.

Ship Repairing Facilities.

For a fixed period of two years after the termination of the war the ship repairing establishments of the United Kingdom should (apart from exceptional and urgent circumstances) be prohibited from undertaking repairs to foreign vessels, so long as the facilities of such establishments are required by British vessels for repairs or survey purposes.

Imperial Shipping Laws.

The Committee consider it most desirable that the laws relating to all shipping under the British flag, and to the ocean-carrying trade throughout the Empire should be Imperial laws. If this cannot be secured, then the Home Government should maintain as against the Dominions, the generally accepted principles of international law. As between nations, the laws of each are operative within its territorial jurisdiction, and on its own citizens beyond that jurisdiction; but no nation assumes the right to legislate for the citizens of a foreign State outside its territorial jurisdiction. If the Dominions exercise the rights, they must accept the limitations, of nations. In the development of the Empire's commercial policy the shipping of the United Kingdom must play an important part, but to the United Kingdom, as an island State, the maintenance of its Mercantile Marine is a vital necessity.

Realization of Enemy Shipping.

The vessels which are taken from the enemy by way of indemnity against the destruction and plunder of the countries and the shipping of the Allies should be sold in open competition amongst the Allies; but before this is done the Allies should agree that no vessel so sold shall be transferred to any flag other than an Allied flag for a period to be fixed. The proceeds realised on the sales of the enemy shipping should be applied as part of the general indemnity obtained from the enemy, and not in recoupment of the individual losses of shipowners, cargo owners or underwriters.

Foreign Ships Using but not Entering British Ports.

Foreign ships which use our ports should be made to contribute to the upkeep, although they do not actually enter those ports. For example, a foreign passenger vessel which calls off a port to embark or disembark passengers should contribute to the upkeep of that port, and not, as at present, avoid dues which are imposed on British vessels actually entering the port.

British Jurisdiction over Foreign Shipping.

The owners of foreign vessels in English ports should be brought, for all purposes, within the jurisdiction of the English Courts. Every other country, including Scotland, insists upon its Courts having full jurisdiction over claims upon foreign vessels and effective means to make the owners of such vessels, whilst in our ports, amenable to such jurisdiction.

TRIAL TRIP OF THE FIRST STANDARD SHIP.

The first of the standardised ships built to the order of the British Government has completed her final tests and been put into commission as a cargo carrier for the nation.

According to an account issued by the Press Association, the trial proved an unqualified success in every respect. "Experts who were on board during the inaugural trip were unanimous in their praise of the vessel." Rain squalls were experienced at intervals, while a choppy sea prevailed, but these weather conditions served only to enhance the steady behaviour of the ship. A representative party boarded the vessel at the anchorage, and afterwards proceeded on the measured mile, where the machinery, &c., were severely tested, while a thorough tour of inspection was made.

Among others present were:—Sir Joseph P. Maclay, Bart., the Minister of Shipping; Lord Pirrie (of Harland & Wolff, Belfast); Sir Leo Chiozza Money, M.P., Parliamentary Secretary to the Shipping Controller; Brigadier-General Collard, Deputy Controller of Auxiliary Shipbuilding; Sir Thomas Dixon (chairman of the firm who are managing the first standardised ship); Mr. Graeme Thomson, C.B., the Director of Transports and Shipping; Mr. F. W. Lewis (member of Sir Joseph Maclay's Shipping Control Committee); the following members of the Shipbuilding Advisory Committee: Messrs. F. N. Henderson, W. S. Abell, C. J. O. Sanders, A. C. Ross, and W. Rowan Thomson; Mr. Thomas M. Walsh, representative of the National Sailors' and Firemen's Union, representatives of the various Classification Societies (the British Corporation and Lloyd's Register), and the chief representative of the Board of Trade in Glasgow.

The standardised ship has been designed with the idea of providing a good type of cargo carrier in the shortest possible time, with the minimum expenditure of material, having regard to war conditions, which involves the question of the speed of the ship. The keel was laid in February this year, and on Saturday—less than the full six months—the vessel was fully loaded and ready to go to sea.

There are two types of vessels of 8,000 tons d.w. carrying capacity. These are classified "A" and "B" types, the first named being single-deck ships, and the others two-deck ships. This one is of the "A" class. It is also intended to construct two smaller types; one known as class "C," and these ships will be of 5,000 tons d.w. each; and class "D," all of which will be 3,000 tons d.w. In addition, however, other types are under consideration at present.

All the principal shipbuilders in the United Kingdom are busily engaged on the construction of standardised ships, and while the number on hand need not be stated, the total output will be very substantial.

As in case of the hull, the machinery and engines are all standardised, so that the first engine goes into the hull complete. Special attention has been devoted to the question of speed. A feature of the general arrangements and equipment is provided in the very large hatchways, making the ship almost practically self-trimming, and immensely facilitating the loading and discharging of the ship. In fact, the central idea is that such steamers should be not only built quickly, but capable of being worked speedily.

Thus the standardised ship represents a long step on the way towards producing a "poor man's ship," as it can be run on the most economical lines, everything possible having been simplified. Admittedly there are "no frillings" on the standardised ship, but the essential and paramount question of efficiency has not been overlooked. In the words of the experts, "it will be a very efficient cargo carrier," and there should not be the slightest difficulty in selling such vessels to any private owner after the war. The provision made for the accommodation of the crew marks a big advance upon the men's quarters in ordinary cargo steamers, particularly of the "tramp" class.

The crew are berthed aft in the poop, and separate cubicles are provided, each fitted with two berths. Messing arrangements are separated from the sleeping accommodation, a smoke-room is provided for general use, and special arrangements are made for steam-heating in the men's quarters. There is also a bathroom for the crew. There are minor points on which there is room for improvement. These were quickly noted by Sir Joseph Maclay and his advisers. No doubt experiments will be tried to enhance still further the comfort and convenience of the men.

The practical demonstration before several technical experts occupied many hours on August 25, and the results obtained were in every case in excess of the estimates.

Questioned by the Press Association representative with respect to the submarine menace, Sir Joseph Maclay replied that there never was a disease for which there was not found a cure, or a partial cure; and already a considerable advance had been made, as was proved by the considerably reduced number of steamers lost. Satisfaction is felt everywhere (he added) with the splendid work done by the mercantile marine, and the way in which the officers of the Admiralty are working in harmony with the mercantile marine to secure the best results is especially gratifying.

Referring to the standardised ships, Sir Joseph said the conception at the beginning was to use as little in steel as possible, and to have them rapidly delivered. That vessel had been built in practically five months. Now it is expected that similar vessels will be turned out in about four or four and a-half months. The various types were constructed as economically as possible, and were to be thoroughly efficient for the work they had to do. Some of the ships were specially adapted for carrying grain, being single deckers, others with twin decks would be suitable for carrying any class of cargo.

Sir Joseph commented upon the fact that there is now a general tendency towards standardisation throughout the country. This was seen in a whole variety of manufactures. It thus did not apply to ships alone, although it had lately proved itself exceedingly helpful for the output of shipping. This was bound to be more marked as the scheme advanced; workmen would get into the line of working, and would know exactly what they had to deal with. Standardisation makes matters simpler for everybody—for engines, ships, &c., and it made for economy.

The Press Association representative also interviewed Sir Leo Chiozza Money, who remarked that there was no doubt that standardisation gives, in such a period as we are building in, a more productive result than if we had merely asked the shipbuilders to repeat their customary designs. The latter, he said, will give a quicker immediate result, in some cases at least, but for such a period as we are legislating for standardisation holds the field, as obviously it makes possible standardisation of ship materials, which would not be possible if shipbuilders were merely repeating their usual designs.

French Seafarers.—Measures for improving the material and moral condition of seafarers and their families, and especially to combat the evils of alcoholism, have been under consideration by a Committee of the Central Association of French Shipowners. Among the decisions already arrived at is one to the effect that the Association should encourage the growth of population by the grant of bonuses to their employers, varying in amount according to the number of children in a family. It has also been agreed, in view of the heroism shown by merchant seamen in face of the submarine menace to make a contribution of 500,000 fr., say £25,000, towards the establishment of an orphanage for the care of children who have lost their parents through the war.

GENERAL NEWS SECTION.

PERSONAL.

Mr. A. Miller, for many years commercial director of Vickers' shipyard, at Barrow, was entertained to dinner, on August 29, at Vickers' Abbey House, Barrow, on his retirement.

Mr. William Henry Peat, of W. B. Peat & Co., Middlesbrough, has been appointed a trustee for the Debenture Stockholders of the Tyne-Tees Steam Shipping Company, Ltd., in the place of the late Lord Furness.

Tyneside people learned with regret of the fatality to Lord Aberconway's second son, Second Lieutenant the Hon. F. W. S. McLaren, M.P., while flying at Montrose. Lord Aberconway is a director of Palmer's Shipbuilding Company, Ltd., and was formerly chairman.

Mr. Thomas Edward Morel, Roxburgh, Penarth, principal of Morel, Ltd., shipowners, Cardiff, and Mr. Edward Lowther, General Manager of the Port Talbot Railway & Docks Company, are included in the Lord Chancellor's list of additions to the Commission of the Peace for the county of Glamorgan.

Mr. Johan Vogt, a member of the firm of Vogt & Maguire, shipbrokers, Liverpool, has been definitely appointed Consul for Norway at the port of Liverpool and district. He has succeeded Mr. J. Bull, who left Liverpool a little over three years ago to take up an important Government position.

Captain A. W. Wright, Docks Manager at Goole, is lying seriously ill in hospital in London. He was released last November by the directors of the Aire and Calder Navigation Co. to take up an important staff appointment under Sir Eric Geddes in connection with dock and transport work in France.

Mr. Thomas H. Catcheside, a well-known Newcastle coal exporter, has died suddenly at his residence, Inglewood, Gosforth, at the age of 52. He was the son of a prominent local merchant, and commenced business some twenty-eight years ago, the firm ultimately becoming widely known as T. H. Catcheside & Co., shipowners, coal exporters and shipbrokers.

Mr. Joseph Spencer Compton Watson, shipbuilder, of Beckingham, Gainsborough, died on August 30 at the age of 72 years. About 25 years ago he founded the present shipyard on the Notts side of the River Trent, after a vain endeavour to secure suitable land on the Lincolnshire side at Gainsborough. Mr. Watson was a Justice of the Peace, a Liberal, and a Churchman.

Lieutenant Matthew Armstrong, R.N.R., of the Pacific Steam Navigation Company, has been awarded the D.S.O. He was third officer on the liner *Ortega* when she so brilliantly escaped from the German cruiser *Dresden* through an uncharted strait in the South Pacific Ocean. On the conclusion of that memorable voyage he joined the R.N.R., in which he has displayed conspicuous ability.

The death occurred on August 27 of Mr. William Johnston, at Woodslee, Bromborough, Cheshire, senior partner in the shipping firm of W. Johnston & Co., Liverpool. Mr. Johnston, who was 76 years of age, founded the Johnston line of steamers, which maintained regular services between the Mersey, Baltimore, and the Mediterranean. Last year, upon the absorption of the Johnston Line by Furness, Withy & Co., Mr. Johnston retired from active participation in business. He was a vice-president of the Liverpool Shipbrokers' Benevolent Society, and was a generous supporter of many charitable institutions.

The death occurred, on August 29, of Sir Thomas Bland Royden, Bart., of Frankby Hall, Cheshire. Sir Thomas, who was 86 years of age, was the senior partner in the firm of T. B. Royden & Sons, shipowners, and for some years had lived in retirement, but continued to exercise an interest in the many commercial undertakings with which for about half a century he had been identified. The late baronet was one of the foremost figures connected with the shipping activities of the Mersey. He was the son of a Liverpool shipbuilder and shipowner, and was born in 1831. His business training was gained in the shipyard of his father, to whom he was formally apprenticed. Not only in marine construction, but in the methods of business in a shipowner's office was he carefully and thoroughly instructed, for at that time, besides managing the shipbuilding yard, his father ran a line of sailing vessels between Liverpool and South America and Calcutta. When shipbuilding in the South-end became impossible, the late baronet, about the year 1893, concentrated his whole energy on the business of shipowner, and acquired a fleet which formed the nucleus of a fine list of steamers constituting the Indra Line, trading to South America, Australia, New Zealand and the Far East. In 1873 he made his first entry into public life, when he was returned for the City Council. In 1874 he was put on the Commission of the Peace for the city, and in 1878 was elected Mayor. For 10 years afterwards he gave the city the benefit of his services in the Council, but in November of 1889 declined to seek re-election. Fourteen years later (December, 1903) he came forward again and appealed for the suffrages of Kensington Ward. He was returned by a majority of 320 over Mr. J. L. Langford, the Liberal candidate. In the following November he was elevated to the Aldermanic Bench, a seat which he retained up to his retirement. Another important page of Sir Thomas Royden's history is covered by his Parliamentary career. In the south end of the city his popularity was beyond dispute, and when he stood as Conservative candidate for the West Toxteth Division at the General Election of 1885, his return was a foregone conclusion, his majority over Mr. Thomas Sutherst, the Liberal candidate, being nearly 2,000 votes. He continued to represent the division until 1892, when he decided to retire. In Parliament his expert knowledge of all that concerned the shipping interest made him a valuable member of the several technical committees on which he sat. He was a member of the Royal Commissions dealing with the question of unseaworthy ships and loss of life at sea, and of that for fixing registered tonnage of ships; he also served several Board of Trade commissions. The numerous trade and other associations with which Sir Thomas was connected will sufficiently indicate the comprehensive and varied activities of his busy life. He was Chairman of the Union Marine Insurance Company and Chairman of the "Red Book" Association, and continued so until the necessity for the "Red Book" ceased. He was also Chairman of the Bank of Liverpool, the Salt Union, the Liverpool Sailors' Home Committee, the *Conway* Committee and the Building Committee of the Homes for Aged

The late Sir T. Bland Royden, Bart.

Mariners. In May, 1904, he accepted the position of President of the Liverpool Constitutional Association, and thereby took upon himself the arduous duties of Leader of the Conservative Party in the city. Shortly afterwards he was the recipient of his baronetcy from King Edward—a well-merited reward for his multifarious public services. The new baronet is the elder son of the late Sir Thomas B. Royden. He was educated at Winchester and Magdalen College, Oxford, and entered his father's office in 1895. He is now both a member of the firm of T. B. Royden & Sons and a Manager of the India Line, Ltd. He is also a Deputy Chairman of the Cunard Company and a Director of the London City & Midland Bank, the Lancashire & Yorkshire Railway Company, the Union Marine Insurance Company and the Pacific Oil-field Company. He is likewise Deputy Chairman of the Liverpool Steamship Owners' Association, Hon. Treasurer of the training ship *Indefatigable* and a member of the Committee of the David Lewis Northern Hospital; also, he is High Sheriff of Cheshire.

Mr. George Armstrong, who has severed his connection with Henry Scholefield & Son, Newcastle, in order to take up an important appointment with the British Tanker Company, Ltd., the owners of a large fleet of oil steamers, has been presented with a gold watch and chain, together with a pair of vases for Mrs. Armstrong, by his Quayside friends. The presentation was made by the Lord Mayor of Newcastle (Mr. George Lunn).

On the recommendation of the Marquis of Londonderry, M.V.O,. His Majesty's Lieutenant for Co. Down, Mr. Frank Workman, The Moat, Strandtown, Belfast; Mr. Chas. E. Allan, Stormount Castle, Belfast; and Mr. John Miller Andrews, Comber, have been appointed Deputy Lieutenants for Co. Down. Mr. Workman and Mr. Allan are partners in the firm of Workman, Clark & Co., Ltd., and Mr. Andrews is a brother of the late Mr. Thos. Andrews, managing director of Harland & Wolff. He is a director of the Belfast & Co. Down Railway Company, Ltd., of which his father, the late Rt. Hon. Thos. Andrews, D.L., was chairman for many years.

Capt. A. H. Perrin, late master of the steamship *Copswood*, was recently presented at Cardiff with a handsome silver cup from the King of Norway in recognition of services rendered for rescuing the whole of the crew of the Norwegian barque *Lofspring*, on Christmas Eve, 1915. It was stated that when off Longstone, in the North Sea, the *Copswood* sighted the *Lofspring* dismasted and flying signals of distress. Owing to the tremendous seas, rescue efforts at first failed. The *Copswood* stood by during the night and next morning the crew were rescued with exceptional difficulty. The *Lofspring* was at this time water-logged, the crew clinging to the deck-house. Capt. Perrin is now master of the *Taywood*.

FROM OUR CORRESPONDENTS.

CLYDE AND DISTRICT.

(From Our Own Correspondent.)

Glasgow Fleet Sold.—The sale of a fleet of 14 Glasgow-owned steamers, which is just reported, is perhaps the most important shipping deal connected with the Clyde within recent years. The sellers are James Gardiner & Co., Glasgow, and the buyers are understood to be Furness, Withy & Co., Ltd., Liverpool. The fleet, which has an aggregate tonnage of about 70,000 tons, consists of modern cargo-carrying vessels. Four of them—the *Glencarron*, *Glenlee*, *Glenlyon*, and *Glennevis*, each of about 5,200 tons gross—were built this year. The *Glenspean*, 5,221 tons, was built in 1912; the *Glenetive*, 5,212 tons, built in 1911; the *Glenshiel*, 4,798 tons, and the *Glenorchy*, 4,737 tons, built in 1909; the *Glendevon*, 4,169 tons, and the *Kintail*, 3,537 tons, built in 1907; the *Glenaffric*, 4,144 tons, and the *Glendhu*, 4,129 tons, built in 1905; the *Glenelg*, 4,160 tons, built in 1904; and the *Kincraig*, 3,700 tons, built in 1901. It is understood that only one steamer belonging to the firm has been lost by submarine attack, that vessel being the *Glenclunv*. The fleet at the time of its sale was somewhat larger than it was prior to the outbreak of the war. The price received for the 14 vessels is said to be about £2,000,000, but considering the high-class vessels involved and the efficient condition in which the fleet was maintained, it is not considered a too large one.

Shipbuilders and the Scottish Canal.—The interest which is now being taken by prominent shipbuilders in the proposal to construct a ship canal across central Scotland is shown by the number of representatives of the industry which attended a meeting held in Glasgow last week in connection with the movement. The meeting was called by the Special Committee of Glasgow Corporation on the Forth and Clyde Ship Canal, and there were present from the Clyde Shipbuilders' Association the following representatives: Mr. A. J. Campbell (of William Beardmore & Co.); Mr. A. M. Kennedy (of William Hamilton & Co., Port Glasgow); and Mr. Robert L. Scott (of Scott's Company, Ltd., Greenock). From the North-West Engineering Trades Employers' Association there were present Mr. Sinclair Couper (of Lindsay, Burnet & Co., Govan); Dr. John Inglis (of A. & J. Inglis, Pointhouse Shipyard); Mr. George Dunsmuir (of Dunsmuir & Jaekson, Glasgow); and Mr. Thomas Biggart, secretary. A general exchange of views took place on the proposal to construct a ship canal. Representatives of the shipbuilding and engineering associations stated that these bodies had not yet had the matter under consideration, but it would receive their attention at an early date.

Development of Forth Seaports.—A movement has been instituted by the authorities of all the ports on the Firth of Forth with the object of developing these ports after the war. At present information is being collected and a report is to be prepared setting forth the shipping, docking, shipbuilding and ship-repairing facilities at the various ports. The harbour and local authorities taking part in this movement are those of Leith, Burntisland, Methil, Grangemouth, Kirkcaldy, Inverkeithing, Alloa, B'oness, Musselburgh, and Kinghorn. A conference was held recently which was attended by representatives of these places, and it was agreed on that occasion to offer to the Government all assistance possible in connection with the needs of the naval base at Rosyth, and to bring under the notice of the Government the docking, ship-repairing and shipbuilding facilities which exist at the seaports on the Firth at present, as well as a statement as to the developments which may be expected to take place in the near future.

Clyde Dispute Settled.—With the finding of suitable employment for the workmen who were deported some time ago from the Glasgow district because of their attitude in encouraging strikes, this somewhat unpleasant incident may now be said to be closed. The men who had been deported were allowed to return recently to their homes, but they were not all reinstated in their former positions. Since Mr. Churchill became Minister of Munitions, however, a satisfactory arrangement has been made and appointments have been found for all the deportees, including the leader of the group, who has been given a job as a foreman in a munitions factory.

NORTH-EAST COAST.

(From Our Own Correspondent.)

Production of Tonnage.—In the districts where it is possible to obtain the best testimony, it is commonly acknowledged that the shipbuilders and the shipyard workers have done a great deal to accelerate the production of tonnage since the war commenced, but according to a statement made by Dr. G. B. Hunter, at the annual meeting in Newcastle of Swan, Hunter & Wigham Richardson, Ltd., it would be incorrect to say that all shipbuilders or all their workmen were working unusually hard, or were feeling any unusual strain during the conflict, or making sacrifices. They could do more if supplied with the materials, and if called upon to make greater efforts and increase the output of ships. Dr. Hunter contrasted the difference in the sacrifice of those at home and the men on the field of battle, and doubtless this was the idea that prompted the opinion that there is still a margin of unexercised effort in the shipyards. If there is latent power yet to be exerted then we may share the view of Dr. Hunter that it will be put forth with all possible resoluteness rather than the country will be led into accepting an inconclusive peace.

Surmounting Difficulties.—"History shows that this nation thrives on difficulties" was a remark made by Lord Furness in his speech from the chair to the shareholders at the annual meeting of the Cargo Fleet Iron Company, Middlesbrough, last week. There is a good deal of truth in what his lordship said, for we know there is still in the old country a genius for surmounting difficulties, however perplexing they may at first appear. But when the war is over it is quite conceivable that the nation's industries will be faced

with new problems that will severely tax all the initiative and resource that can be brought to bear upon them. In the world of labour women have, in the course of three brief years, come to occupy an extraordinarily prominent place, and what their future in industry is to be no one can fully foresee. Then there is the steadily growing aspiration of labour—male and female—to secure an increasing share in the fruits of their production, and these two questions alone are sure to loom large when the great European conflict is ended.

Lord Furness took a cheery view of the future of our leading industries, of which the iron and steel trade is one, provided that capital and labour will co-operate for their mutual benefit. In the past, it may be mentioned, the ironmasters and their employees have led the way in the founding and the successful maintaining of machinery for adjusting wages according to the average net selling price of the article produced, and for settling disputes. When we remember the very important part which the iron and steel trade plays in so many kinds of industrial activity, it is gratifying to know how well the masters and the men have gone on together in the past. These amicable relationships augur well for the future.

Tyne-Tees Steam Shipping Company.—The first appearance of Sir William Stephenson, Newcastle's "grand old man" of commerce on the local Quayside, after an illness extending over several months, was to take the chair at the annual meeting, held in the past week, of the Tyne-Tees Steam Shipping Company. It was rather interesting that this should be so, because his purchase of shares in that concern was among the earliest of his investments. The Tyne-Tees Company dates back only 14 years, the Tyne and the Tees coasting and continental services being then amalgamated, but the Tyne Steam Shipping Company was founded in 1864, and Sir William, who is now in his 82nd year, was one of the original shareholders. The war and losses by sea have adversely affected the company, so much so that no dividend was declared for the last half-year, but the financial position of the undertaking is very sound, there being a large sum in reserve for the time when the Tyne-Tees again goes into the market for new tonnage. Although the shareholders have had only 5 per cent. for the year just dealt with, they were paid 20 per cent. last year, so that an average of 12½ per cent. for the two past years cannot be regarded as unsatisfactory.

Removal and Disposal of Wrecks.—The Consultative and Parliamentary Committee of the River Wear Commission have reported to that body that considerable, and in some cases irrecoverable, expense is involved by port authorities owing to the removal and disposal of wrecks having to be carried out by them. It was recommended that the cost should be met out of imperial revenue, and a resolution to this effect was carried, particularly in view of the fact that the finances of port authorities had suffered severely in consequence of the lessened exports and imports due to the war. A copy of the resolution was forwarded to Mr. A. Beasley, of the Taff Vale Railway, Cardiff, the chairman of the Associated Port and Dock Authorities of the United Kingdom, with a request that the proposal be brought before that organisation.

MERSEY SHIPPING AND SHIPBUILDING.

(From Our Own Correspondent.)

Big Shipping Deal.—The chief item of interest to record this week is the purchase by Furness, Withy & Co., of the entire fleet of James Gardiner & Co., Glasgow—some 14 cargo steamers, aggregating about 70,000 tons, and the purchase price is stated to be £2,000,000. The vessels average between 4,000 and 5,000 tons, and some of them are of quite recent construction. The fleet as a whole may be described as modern, and specially designed cargo carriers.

Increased Haulage Rates.—The Mersey Docks and Harbour Board have decided now to increase the charge for the haulage of railway traffic on the dock railways from 6d. to 9d. per ton on and after September 17. This follows upon the master partners' rates being increased by 13½ per cent., which will come into force on the same day.

Dockers' Wages Increased.—The official award regarding the recent arbitration respecting Mersey dockers' wages which is responsible for the past charges being increased, was made known on Saturday, and the increase given is roughly speaking about one-half of what was asked for. They have been given a further increase of 1s. all round on present-day rates, present night rates, and present Sunday rates, hour rates to be increased proportionately. This brings the day rates 4s. per day above what they were before the outbreak of war.

SOUTH WALES NOTES.

(From Our Own Correspondent.)

Time Rates.—In the original schedule of the Government insurance scheme giving the rates of premium to be paid by free ships, the following details were given for time rates :—

(1) Coasting round Great Britain, 2¼ per cent. for 91 days.

(2) East coast of Ireland to Great Britain north of Bristol Channel, 2¼ per cent. for 91 days.

(3) Ireland to Bristol Channel, 3¼ per cent. for 91 days.

(4) Ireland to south and east coasts of Great Britain, 4¼ per cent. for 91 days.

Subsequently there was added one from the United Kingdom to France, not south of Brest, of 6¼ per cent. for 91 days. A circular letter has been issued by A. Bilbrough & Co., in which is shown the following alterations and additions in respect of time rates for free ships :—

(1) Coasting in Great Britain, with option of French coast : Under an insurance for 91 days' trading in Great Britain at 2¼ per cent., the Hull Insurance Committee would include voyages to France, not south of Brest, at an additional premium of 1 per cent. for each out and home voyage, provided notice be given prior to sailing. The time occupied in the deviation would form part of the 91 days insured. A voyage from the west or east coast to France and back would be treated as two voyages or, as referred to above, an out and home voyage.

(2) East coast of Ireland (or Ireland) to Bristol Channel : The rate for this would be 3¼ per cent., and it would attach under No. 3 of the original time rates.

(3) To south of Bristol Channel : The rate for this would be 4¼ per cent. and it would attach under No. 4.

(4) Steamers trading exclusively within limits of Beira and Chinde : 2 per cent. for 91 days.

(5) No. 9 rate (8 per cent.) in the Free Ships' Rates for Voyages is extended to cover as far as the Cameroons instead of River Gambia.

(6) "The East" to west coast of South America : 1½ per cent.

(7) Coasting from Glasgow via Belfast and Waterford to the east coast of the United Kingdom via port or ports : 4½ per cent. for 91 days.

(8) South Georgia to Durban and back to South Georgia : 5 per cent.

(9) Havre via west coast of Great Britain to Azores : 8 per cent.

(10) Azores to New York : 3 per cent.

(11) New York to Australasia via the Cape : 4 per cent.

(12) New York to Australasia via Panama : 2 per cent.

State Insurance and Free Tonnage.—The position of free ships under the new insurance scheme is referred to in a communication received by A. Bilbrough & Co., Cardiff, from the Board of Trade :—"(1) Attention has been called to a number of cases of owners whose war risks policies have expired and who, owing to commitments, are not in a position to recoup themselves for the extra cost of insurance under the new scheme. The position of such owners is now under consideration, and it is hoped that some arrangement will shortly be come to which will remove any hardships involved. (2) An announcement on the subject will be made in due course. In the meantime any such owners whose policy has expired should take out a policy under the new scheme and continue running. (3) The Ministry of Shipping and Board of Trade undertake that such owner shall have the benefit of any arrangement that is ultimately come to, and the premium paid will be taken into account. Each case will be judged by its merits according to the circumstances, but in no case will the owner be worse off than if he had been requisitioned."

THE FREIGHT MARKETS.

(From Our Own Correspondents.)

London.—If the London freight market is without any new feature it can with truth be said that there is no drooping tendency of values in any direction. Rates all round are very steadily maintained and all available tonnage is eagerly snapped up, the principal sources of demand being the ports in the North American Atlantic seaboard and in the East. The Plate is inactive and rates remain nominal at the unchanged figures last quoted of 145s. from the up-river ports or 37s. less for down-river loading. The Northern Range ports are badly in need of carrying space. To the United

Kingdom 200s. on net form of charter is the market quotation, while to the French Bay ports 240s. to 245s. is offered, and to West Italy 325s. For Gulf loading an additional 30s. on these figures would be forthcoming. Heavy grain would come at 30s. and oats at 25s. to the United Kingdom. Virginia coal charterers are open to pay 125s. to the Plate and $32 to Rio de Janeiro. Cube sugar to France and Italy is a paying proposition, nitrate is worth 190s. to the United Kingdom and for case oil $1.50 is offered from the Gulf to Brazil. In the East Karachi to the United Kingdom is worth fully 250s. on scale basis, and Bombay offers up to 275s. on deadweight to the same destination, 400s. to the Mediterranean. The Madras coast is still prepared to pay 500s. for kernels to Marseilles, while the rice ports are unchanged at 480s. to 500s. Burmah to the United Kingdom or 500s. Saigon to France. In the Mediterranean section of the market the ore and phosphate ports are taking up tonnage on the basis of 45s. Huelva to the Mersey, 50 fr. Bilbao to Boulogne, 70s. Sfax to the Bristol Channel, 50s. Bougie to the Clyde, and 65s. Tunis to the same destination. Pyrites offer from Huelva to the East Coast United Kingdom at 60s. There is a strong demand for vessels on time charter for which high rates can be obtained, a small neutral steamer having been fixed at 47s. 6d. for one round trip in the United States and South American trade.

Glasgow.—There has been no improvement in the condition of affairs existing on the Glasgow market since our last report. The supply of free tonnage has been so scarce that on one or two days no business was reported. Rates continued firm and reflected the strong demand, but in the absence of actual business, quotations were purely nominal outside of those for controlled destinations. In the American trade the demand was good, and a fixture was reported from Philadelphia to a French Atlantic port at 225s. September; and another from the States to Liverpool at 205s., net, September. Virginia to the River Plate reported a fixture at about 75s., coal.

Newcastle-on-Tyne.—The mining industry has been considerably helped during the week under review by heavy official requisitioning of coal, particularly steam qualities, for which, of course, there has been no difficulty in furnishing the required transport facilities. So far as chartering in the open freight market is concerned, however, business continues exceedingly limited by reason of the scarcity of free tonnage. The demand from all those ports with which we trade nowadays shows no diminution; indeed, if the rates offered and paid be any criterion, the request for tonnage is more pressing than ever. Nevertheless, excepting for near ports, very little chartering has been possible. French Atlantic destinations have been moderately supplied with shipping at the full scheduled figures. Coasting business is now based on the advanced rates of from 17s. to 18s. to London, two vessels having been taken up at 17s. and one at 18s. Scandinavia-wise, Gothenburg has again been fixed for at 200 kr., whilst Stockholm continues to be quoted at 207½ kr. The rate for Gibraltar has advanced sensationally, two steamers having been fixed, one at 95s. and the other at 97s. 6d., as against 85s. a week ago. For Portuguese ports, freights are based on 90s. to Lisbon and 100s. to Oporto. The Spanish Mediterranean has Barcelona at fully 220s. Port Said continues to be quoted at 165s.

Liverpool.—Variable conditions prevail in the outward freight department as a result of the irregular supply of boats. Business done is therefore restricted to scheduled ports at limitation rates, but tempting rates are offering for free ships to neutral ports. A neutral boat, Cardiff to Brest, has made 45s. and a like boat, Swansea to Caen, 950 tons, has made 46s. 6d. A round trip from the States to River Plate has been closed at 50s. Time business is subject to the same conditions, but there are few fixtures of importance to record. Nevertheless, free ships could be fixed at premium values if only suitable boats would offer. In the homeward trades, Eastern markets are still unable to get tonnage, and rates are untested. Free tonnage could, however, be fixed at very remunerative rates, and very possibly above market indications from most eastern ports. The most active market is North America for tonnage on net charter basis which is worth 200s. New York to Liverpool, and 250s. to French Atlantic ports. Up to 350s. is quoted to West Italy. Other markets are devoid of interest, and little is being done.

Cardiff and Swansea.—Business continues on very restricted lines. The tonnage position has been very difficult, principally owing to the bad weather which has prevailed. A fair amount of tonnage has been allocated to France, but in other directions little business has taken place. The following fixtures were reported:—Cherbourg, 130s. for a small sailing vessel; Brest, 45s.; Havre, twice at 45s. 9d.; St. Malo, 45s.; Caen, twice at 46s. 6d.; all for neutral vessels. At Swansea chartering for ports outside the schedule areas has been practically in abeyance owing to the acute shortage of free tonnage, but there were numerous inquiries, and rates were firmly upheld for all directions. A fairly large amount of business was done for France, the fixtures reported were:—Havre, 44s. 3d.; Caen, 48s.; Trouville, 48s.; and Rouen, 50s. 3d.; Port Talbot to Honfleur, 48s. In each case the vessel fixed was neutral owned.

Hull.—The market is very firm in tone and the general inquiry for tonnage is for North French and West Italian destinations. There is a big demand for carrying tonnage for gas coal and West Yorkshire Hartleys to Northern France. The West Italian trade is restricted through lack of suitable tonnage. The neutral markets are quiet, for whilst they are full of inquiry there is very little neutral tonnage available in this market at present.

THE COAL MARKETS.

(From Our Own Correspondent.)

The general condition of the coal markets of the country is that they are rather featureless, that is so far as the principal coal exporting centres are concerned. It is not that inquiries are lacking; indeed these are to some extent good, but the difficulty is to find means of getting the output of the pits away, and this difficulty is in some cases a very pressing problem. Were the means of distribution better the coal trade would be immensely improved, but there are, unfortunately, no signs of an early improvement in this respect. As a result trade is quiet all round, though the demands inland continue as pressing as ever.

The bunker coal trade is likewise without feature. Both on the North-East Coast and at the South Wales ports is without animation, due to the decreased movement of shipping which has not improved during the past fortnight. Consequently there are plenty of bunkers of all qualities available, and indeed stocks have become larger than the collieries care about.

On the North-East Coast best bunkers are plentiful at 24s. to 25s., and ordinaries can readily be obtained at as low as 16s. 3d., the official quotation running up to 24s. For specials 30s. is asked and these, which are mostly required for export, are not in excessive supply. The position in South Wales with regard to bunker fuel is very similar. The South Wales market is not showing such a firm tone as has been evident during the past month, the demand having fallen off and there seems no immediate prospect of any improvement. Best bunkers continue to be quoted at 23s. and ordinaries at 21s. 6d., and at these values they can readily be obtained.

The North-East Coast coal markets have developed rather a sagging tendency. This is not due to any material falling off of inquiries, which are, indeed, pretty brisk, especially from neutral countries, but rather arises from the difficulty experienced in moving the outputs of the pits. Plenty of coal could be disposed of if the railway and shipping facilities were equal to the task of handling it, but these are, unfortunately, no better than has been the case for some time past, and as a result a large number of pits are compelled to resort to short time. Stocks also are too large, and but for the fact that prices are fixed values would, in the circumstances which obtain, undoubtedly fall.

There is still a good market for the best class of steam coal, while smithies and nuts and gas coals are very well taken up inland, but for other classes of coal requirements appear to be small.

Approximate quotations are for best Blyth steam coal 30s., and smalls, 20s. to 21s. 6d.; Tyne primes, 25s., and smalls, 20s. to 21s. 6d.; second steams, 25s. 6d. to 27s., and smalls, 18s. 6d.; unscreened steams, 24s. to 25s.; North Northumberland steams, 28s., and smalls, 20s.; smithies, 29s. 3d. to 30s.; nuts, 24s. 6d. to 26s.; best Durham gas coals, 25s., and seconds, 23s. 6d.; coking coals, 17s. to 25s.; house coal, 28s. 6d. to 30s.; best bunkers, 24s. to 25s.; ordinaries, 16s. 3d. to 24s.; and specials, 26s. 6d. to 30s.; foundry coke, 42s. 6d., and blast furnace coke, 28s.

The South Wales coal trade, as previously stated, exhibits a falling off from the comparative activity by which it has been characterised during the preceding few weeks. Inquiries are fewer and operations have been on a small scale. The movement of shipping has not been so brisk, and the collieries are finding it somewhat

hard to avoid the too rapid accumulation of stocks while at the same time keeping the pits going fully. It seems as if there must be a resort to short time if the current conditions do not change soon.

Values rule approximately as follows: Best Admiralty large coal, 33s.; best seconds, 31s. 6d.; and seconds and ordinaries round about 30s.; drys, 28s. 6d. to 30s.; best large Black Veins, 30s.; Western Valleys, 29s.; Eastern Valleys, 28s. to 29s.; Bunkers, 21s. 6d. to 23s.; and smalls, 22s. 6d.; washed nuts, 28s. 6d. to 30s.; house coal, 30s. 9d. to 33s.; No. 3 Rhonddas, large, 30s. 9d., and small, 26s.; No. 2 Rhonddas, 27s., and smalls, 17s. to 19s.; through coal, 22s. to 23s. 6d.; patent fuel, 30s. to 32s. 6d.

The Scottish coal markets present the same featureless condition which has characterised them for so long. They are devoid of animation, and the export trade is very restricted. This is indeed the principal drawback to the Scottish coal trade, for otherwise the demand is good and the inland trade keeps up its briskness. There is less demand for house coal though the recent spell of inclement weather has given it a little more activity. The position in Fifeshire is not so good on the whole as in the West of Scotland or the Lothians.

Prices rule at for splints, 28s. to 30s.; Hartleys, 29s.; Ells, 26s. 6d. to 28s.; steams, 27s. 6d.; Navigations, screened, 28s. to 30s.; and unscreened, 23s. 6d. to 25s.

On the Hull coal market the chief difficulty which presents itself is in obtaining sufficient coal to satisfy the heavy inland demands, coupled with the requirements of the authorities and the amount of fuel required to go forward to allied destinations. Exports in other directions are small. A good deal of coal also is being sent from Hull to London. The difficulty of securing full supplies ensures that the full limitation values are firmly maintained, and there appears no probability of any change in this condition of affairs in the near future.

Prices rule at 30s. for large steams; for Hartleys, 27s. 6d.; house coal, 27s. 6d.; gas coal, 25s. to 25s. 6d.; and nuts, 23s. to 25s.

There is no alteration in the firm tone of the Midland coal trade, which is good for all classes of fuel, and especially so for steam coal. The munitions and manufacturing centres are pressing for deliveries, thus keeping the collieries fully employed. The house coal trade is hardly so active, but even in this department the production is very quickly taken up. Prices all round keep very firm.

On the London coal market it has been found that supplies are not coming to hand so freely as could be wished. The demand, however, remains as strong as ever, for where merchants are not pressed with orders they are desirous of building up stocks, which are still less than the needs of the approaching winter will require. There has, too, been a quickened demand for house coal owing to the bad weather.

COMPANY MEETINGS.

Swan, Hunter & Wigham Richardson, Ltd.—The fourteenth annual meeting was held on August 28. The Chairman (Dr. G. B. Hunter) in moving the adoption of the report and balance sheet, said the sum to be dealt with was practically the same as last year. They had transferred to reserve the same sum as in the previous year, namely, £100,000, bringing the reserve fund up to £500,000. The amounts to be paid in dividends and to reserve totalled £293,934, also the same as last year. Trade creditors amounted to £1,015,592, as compared with £511,866, and a satisfactory point in respect of the former larger sum was that they themselves were the creditors in the matter of reserves and provision. The item debts due to the company, amounting to £716,092, was made up largely of money due to them in respect of ships nearing completion. With regard to the new yard at Southwick, it was a valuable addition to their works. He expected they would have to go further, for there was every prospect of the Southwick yard being fully employed for some time to come. A large part of their profits had been made not in their shipyards and engine works but by their large investments in other companies and other works. The present strong position of the company was largely due to laborious building up in past years, with much hard work and sound business ideas. He had received a suggestion from some of the preference shareholders that they would be glad if the ordinary shareholders would allow them to participate to some extent in any profits in excess of 5 per cent. He did not think anything would come of that. It would be incorrect to say that all shipbuilders, or all their workmen, were working unusually hard, or were feeling any unusual strain during the war, or making sacrifices. They could do more if supplied with the materials, and if called upon to make greater efforts and increase their output of ships. They had made no sacrifices to be compared with what our men in the fighting line are enduring; and he believed that shipbuilders and shipyard men would greatly increase their exertions and greatly increase any sacrifices they were making rather than face defeat or failure in the war, and rather than accept an inconclusive peace. He believed that shipbuilding would be brisk for some years after the war, and that, therefore, there were good prospects for the shareholders.

Mr. Noel E. Peck seconded the motion, which was carried.

Tyne-Tees Steam Shipping Company, Ltd.—The fourteenth ordinary general meeting was held on August 28. The Chairman (Sir W. H. Stephenson) in moving the adoption of the report and balance sheet, said: We are living in times when it is almost impossible to forecast the changes which may arise. In March last an interim dividend at the rate of 10 per cent. was paid for the year, and our half-yearly balance to the end of December fully justified that; but since then, although we received very large sums of money from our underwriters for the steamers which had gone down, we lost their earning power, and, though financially the company is in a good and sound position, our board is unable to recommend the payment of a further dividend for the year. On the debit side interest on the 4½ per cent. debenture stock is the same, and so is the interim dividend on the ordinary shares at the rate of 10 per cent. for the year, which will perhaps somewhat soften the blow naturally felt on receipt of our annual report and balance sheet. The depreciation of steamers is less by £2,810, in consequence of our having fewer steamers, and, therefore, there is a smaller amount to be written off. Depreciation on freeholds is less by £2,000, because we no longer have anything to write off for goodwill, which has now been entirely eliminated, whilst our freeholds have had the large sum of £54,883 written off them in 12 years. The special addition to the insurance and boiler fund, &c., is £790 less, and this is so because it is only required to be made up to £12,000, which the board consider sufficient. As to the balance sheet, the first two items are, of course, the same as last year; but the debts due by the company are £25,023, against £18,002 last year, and, therefore, about £7,000 more. This is because we provided this sum for a 6 per cent. war risk call. Reserve account and investments and the debenture trust deed are the chief keys to the situation, the depreciation fund having increased from £119,247 to £134,078, or equal to £14,831 above last year, which is, of course, an addition to the strength of the company, whilst debts due to the company on the other side of the balance sheet are £2,379 more than in 1916. Claims on underwriters are £7,874 greater, and insurance paid in advance is £2,118 more, and our investments have the large increase of £66,377, showing the soundness of our financial position, although cash is less by £12,744. Turning to the annual report, the profits for the 12 months amount to £21,849, and the sum brought forward from last year was £14,436, making a total of £36,285. After deductions for dividend, interest on debenture stock, depreciation, &c., there remains a balance of £7,067, which the directors recommend should be carried forward. By our debenture trust deed we are bound to hold all the money we received from the steamers which have been lost as security for the purchase of new vessels when the time comes for us to buy them. Consequently, the huge sum we now hold in Treasury Bills and war stock is not available for the purpose of dividend, although I contend that, as the value we have received from the insurance of our lost steamers exceeds their initial cost, and is far above their book value, and the premiums having been paid out of our revenue, it must indeed seem hard to the ordinary shareholders that they do not get the satisfaction of a further dividend, but have to content themselves as far as they can with the knowledge that their company is financially in an extremely sound condition, and ready to re-invest in new steamers when a favourable opportunity arises. Some shareholders may think that because we have five steamers employed by the Government they must necessarily be increasing our revenue to a great extent, but this is not the case, for having been fixed at the original blue book rates the income from them is very much below what they might have earned for us had they been free. Though we made repeated efforts to have the rates raised to something commensurate with the market values, so far we have not succeeded, but will continue our agitation for increased rates.

The motion was seconded and agreed to.

COMPANY REPORTS AND DIVIDENDS.

Hochseefischerei I. Wieting A.G., Bremen.—This company pays 13 per cent. dividend, compared with 10 per cent. last year.

Bremen-Vegesack Fischerei Gesellschaft.—The directors recommend a dividend of 10 per cent. for 1916-17. Last year no dividend was paid.

Hansa Hochseefischerei A.G. Hamburg Altona.—A dividend of 10 per cent. has been declared for 1916-17. Herr Joh. Kroncke is re-elected member of the superintending council.

Dampfschiffahrtsgesell. Argo, Bremen.—An extraordinary general meeting has been called to amend the statutes of the company so that only subjects of and residents in Bremen may become directors or board members; and so that a 90 per cent. majority be required to effect removal or dissolution of the company.

Falmouth Docks Company.—The report for the half-year ended June 30 last states that the gross revenue was £17,055 and the expenditure £13,465, leaving a balance of £3,590 to be carried to net revenue account. The interest on the "A" and "B" debenture stock has been duly paid to June 30, and the usual instalment of "A" debenture stock has been redeemed. The balance of net revenue account, after paying income-tax and dividend on preference stock for 1916, is carried forward.

Griffiths-Lewis Steam Navigation Company, Ltd.—The directors announce that the further dividend of 7½ per cent. for the half-year which they recommended is deferred in view of the new war risks insurance involving the payment in the next six weeks of heavier sums for insurance than the whole company's fleet has earned since September. Mr. J. C. Gould (the chairman) states that the new impositions involve a loss of £18,403 on a voyage of a 6,400-ton d.w. steamer from Bristol Channel to the United States and back.

Milford Docks Company.—The directors regret that for the past half-year they can only submit provisional accounts, as they have been unable to secure a settlement of the company's claims. It has, therefore, been impossible to make any payment on account of interest upon the "A" debenture stock, and the necessity again arises for proposing an adjournment of the meeting called for August 31. The tonnage of vessels entering the docks during the half-year was 440,504 gross and 187,296 net, as against 468,120 and 201,174 respectively in the corresponding period of 1916.

Snowdon Steamship Company, Ltd.—Charles Radcliffe & Co., the managing owners, have issued a circular to shareholders in which they state that since the last annual balance-sheet was sent to them the company has had to pay as excess profits to the Government £10,461, and a survey which the steamer *Snowdon* had to undergo in the spring cost no less than £8,595, making a total of £19,057, which has completely denuded the company of all cash reserves. The vessel was 68 days undergoing survey, during which period she was off hire from the Admiralty. She then sailed under Government orders, occupying 126 days on the voyage, at a monthly hire of £1,754, or a total of £7,265, out of which the company have had to pay wages, provisions, stores and marine insurance, which has involved a loss to the company of £1,163 for the period. The circular describes how the Admiralty employed the vessel, and after carefully estimating the cost to the Government, calculates that it leaves the Government with a profit of about £40,000.

Dutch Dividends.—According to the Amsterdam *Telegraaf*, the 16 largest Dutch owners (owning practically all the merchant fleet), averaged 37·2 per cent. dividend in 1916, compared with 36 per cent. in 1915; 9 per cent. in 1914; and 11·3 per cent. in 1913. The individual dividends ranged from 9 per cent. to 100 per cent. Smaller owners, not included in this summary, realised yet higher dividends. The 16 large owners under consideration had at their disposal, at the end of 1916, a gross tonnage of 1,090,000 tons, *i.e.*, 113,700 tons more than in 1913, despite many sales and serious losses by sinking. Dutch yards have been exceptionally productive and only recently have there been complaints as to shortage of shipbuilding material. Only about 25 per cent. of the gross profit has been distributed as dividend, the remaining 75 per cent. being applied to reserve, to depreciation, to the construction of new vessels, to war taxes and so forth. Shareholders have already reaped a rich harvest, and, what is more important, the general financial position of the companies has been strengthened immensely. Holland will be a formidable shipping competitor in future and though profits may be reduced during the remainder of the war by U-boat deeds and policy, Dutch owners should be able to show good dividends during the period of high freights after the war. Scandinavian countries are in much the same position, their war losses have been heavy, but they are far more than balanced by the war profits.

COMPANY REGISTRATIONS.

Macleod Shipping Company, Ltd.—Capital £32,000, in £1 shares. Objects, shipowners, managers and agents, ship and insurance brokers, carriers, forwarding agents, lightermen, wharfingers, cargo superintendents, &c. Signatories :—

T. McLeod, Southside, The Park, Hull, shipowner.
J. Rushton, 49, Morpeth Street, Hull, coal exporter's clerk.

Manager, T. McLeod. Registered office, Fitzwilliam Buildings, Alfred Gelder Street, Hull. Private company.

British Commonwealth Insurance Company, Ltd.—Capital, £200,000, in £1 shares. Objects, to carry on any marine, marine accidental, or other insurance, and guarantee business, except assurance of the class specified in section 1 of the Assurance Companies Act, 1909, or any statutory modification thereof, to insure marine risks on the mutual principle, to establish different classes of clubs of insuring members, &c. Signatories :—

W. May, 18, Austin Friars, E.C., solicitor.
P. B. Potter, 29, Gubyon Avenue, Herne Hill, S.E., gentleman.

The first directors are to be appointed by the subscribers. Solicitors, Slaughter & May, 18, Austin Friars, E.C. Private company.

Watercraft Detachable Power Installations, Ltd.—Capital, £20,000, in £1 shares (12,500 preference). Objects, builders of and dealers in engines and power plant for the propulsion of watercraft of all kinds; electrical and general engineers, &c. Signatories :—

T. F. De Saulles, 25, Houghton Road, Birchfield, Birmingham, coal factor's manager.
F. W. Heafield, 18, Frances Road, Handsworth, Birmingham, coal factor's cashier.

The first directors are E. W. Reid, T. H. Coggins and A. E. Hooke. Solicitors, Shakespeare & Vernons, 83, Colmore Row, Birmingham. Private company.

Thomas Rose & Partners, Ltd.—Capital £50,000 in £10 shares (1,000 preference). Objects, ship owners, managers and brokers, chartering agents, coal exporters and merchants, marine and general insurance brokers, &c. Agreement with T. Rose and J. G. Rose. Signatories :—

T. Rose, 38, West Sunniside, Sunderland, shipowner.
T. R. Blumer, 3, The Elms, Sunderland, shipowner.
G. M. Tate, 34, Eslington Terrace, Newcastle-on-Tyne, coal exporter.

The first directors are T. Rose (chairman and permanent director), T. R. Blumer, G. M. Tate and J. G. Rose. Registered office, 38, West Sunniside, Sunderland. Private company.

Watson and McLean, Ltd.—Capital, £10,000, in £1 shares. Objects, to take over the business of engineers, crane and chain makers, &c., carried on as "D. Watson and Co.," at Harmony Row, Govan. Signatories :—

W. McLean, 104, Harmony Row, Govan, engineer.
J. Spiers Watson, Woodcroft, Sherbrooke Avenue, Pollokshields, Glasgow, engineer.

Minimum cash subscription, 1,000 shares. First directors are :—W. McLean and J. S. Watson. Solicitors, J. Grove, 199, St. Vincent Street, Glasgow. Private company.

Isaac Spain, Ltd.—Capital, £5,000, in £1 shares. Objects, yacht, smack, tug, launch, trawl, boat and ship builders and repairers, block and mast makers, blacksmiths, sheet iron and copper workers, ship and fishing boat owners and charterers, &c. Signatories :—

I. Spain, 7, Roker Park Road, Sunderland, boat builder.
W. Spain, 28, North Grove, Roker, Sunderland, boat builder.

First directors, I. Spain and W. Spain. Solicitor, H. S. P. Maitland, 51, John Street, Sunderland. Private company.

Imperial Motor Industries, Ltd.—Capital, £4,000, in £1 shares. Objects, manufacturers of and dealers in motor accessories and components, ships, launches, boats, yachts and floats, &c. Signatories :—

H. Cowen, 1, Berners Street, W.
B. Weinberg, 23, Cranwich Road, Amhurst Park, N., motor accessory dealer.

First directors, H. Cowen and B. Weinberg. Registered office, 11, Denmark Street, Charing Cross Road, W.C. Private company.

NEWS PARAGRAPHS.

Compania General de Tabacos de Filipinos. This company has organised a service of 2,000-ton cargo steamships between the Philippines and South Africa.

Commandeering for Ship Construction. A Reuter message from Washington states that the Shipping Board has asked Congress for a further sum of $915,000,000 (£183,000,000) to be used for commandeering materials, plants, and shipping construction.

New Lubeck Yard. According to *Hamburger Nachrichten*, a limited liability company is to be founded in Lubeck, with a share capital of £88,000, in order to establish a new yard at Schlutup in a favourable position on a wide and deep part of the river.

Light at Cape Spartel. The Board of Trade have received through the Foreign Office a copy of a telegram dated August 23, from His Majesty's Minister at Tangier, stating that the intensity of the light at Cape Spartel would be diminished from August 24. Mariners are warned accordingly.

French Concrete Ships.—A standard concrete ship is about to be launched at Bordeaux. It is a cargo boat of 900 tons, but several others of over 1,000 tons will be built if the trials of this one prove satisfactory. This concrete vessel was built in less than three months, on an even keel, like the steel or wooden ships, and not like the 200-ton cargo boat recently launched at Christiania, with keel uppermost.

Martell Scholarship, 1917.—The Martell Scholarship has been awarded by the Council of the Institution of Naval Architects to Mr. H. C. Carey, of Chatham Dockyard. The scholarship is of the value of £100 per annum, and, subject to the regulations which govern it, is tenable for three years. The Earl of Durham Prize has been awarded to the second candidate in order of merit, Mr. H. D. Leggett, of Portsmouth Dockyard.

Higher Salaries for Norwegian Captains.—By a recent conference between the Norwegian Owners' Union and the Captains' Association, it has been decided that the annual salary of captains taking vessels through the European blockade zone shall be:—£442 for captains of vessels from 500 to 1,200 tons; £496 from 1,200 to 1,800 tons; £550 from 1,800 tons to 2,500 tons; £610 from 2,500 to 4,000 tons; and £662 for captains of larger vessels. Under the 1915 tariff salaries ranged from £176 to £331.

Shipowners and War Risks.—A communication from Mr. C. Hopwood, of the Board of Trade, has been posted on the Cardiff Exchange stating that consideration is being given to the position of owners whose war risk policies have expired and whose commitments preclude recouping themselves for the extra cost of insurance under the new scheme. Owners are advised to take out policies and continue running, and are assured each case will be considered on its merits and that no owner will be worse off than if he had been requisitioned.

Canada Building Wooden Ships.—The coast cities of Canada and the cities on the Great Lakes are witnessing the revival of an industry that flourished at an earlier period, particularly along the Atlantic seaboard, namely, the building of wooden ocean-going vessels. This revival has its impulse in the fact that these vessels may be constructed much more speedily than steel ones. There is also the point of economy. The projected fleets are intended to meet an emergency, and will probably give way to steel vessels with the return of peace.

Shipbuilding in Sweden.—The Transatlantic Company has just ordered four additional boats from the Lindholmens yard, two of 8,000 tons d.w. each and two of 3,500 tons d.w. each. The former will be 378 ft. long, with shelter deck, five hatches and ten steam winches, electric light, wireless telegraphy, &c. In the deck-house amidships will be mess-rooms and accommodation for officers and men, the captain's deck-house being on the boat deck; the crew's quarters will be forward. The engine, amidships, will be triple-expansion, giving the ship, when carrying an 8,000-ton load, including bunkers, a speed of 10½ knots. The two smaller boats will be 265 ft. long, with four hatches and six winches; the carrying capacity will be 3,500 tons. The officers' quarters will be amidships, those of the crew aft. The four steamers are to be delivered in 1921. These four boats make up a total of seven steamers now in course of construction for the company and its subsidiary, the Viking Company.

American-Siberian Steamship Connection.—A steamship connection is to be established between American ports and Siberia during the months of August and September. The route will be via the Kara Sea, and the steamers are to discharge at the mouths of the Obi or the Yenesei, from where the goods will be transported up the rivers in lighters and sloops.

Tanker Construction in U.S.—The officials of the Pennsylvania Shipbuilding Company at Gloucester City, N.J., are preparing for the launching of their first steamship. The company has shifts of men working continuously on the vessel, 24 hours each day. She is a tanker of standard construction, and the keel was laid last September. The keels of five other steamships have been laid and work on them is progressing rapidly.

Conference on Munitions Bill.—An important conference took place recently at the Central Hall, Westminster, of representatives of the Engineering and Shipbuilding Trades Federation in connection with the Munitions Bill. It is understood that the conference was convened by the Ministry of Munitions, and there were some 200 or 300 workers present from all parts of the country. Mr. Winston Churchill addressed the conference. The proceedings were private.

Shipping to Relieve Railway.—Owing primarily to shortage of coal in Sweden, it has been decided to curtail greatly goods traffic on the northern line from Stockholm. As much traffic as possible will be diverted to a steamship service from Norrkoping via Stockholm to Gefle, Sundsvall, and more northerly ports. The line will be operated in conjunction with the railway system and provision will be made to deal expeditiously with express traffic. If necessary, a State line may be established.

Concrete Motor Launch.—There has recently been completed at the works of Murlbloc, Ltd., a concrete motor launch, the dimensions of which are 21 ft. by 5 ft. 3 in. by 14 in., draught. She is of the fast estuary type, and has been built to the designs and under the direction of Mr. John C. Snelling, for many years manager of that firm. The method of construction has been a special one, the skin concrete being only ⅝ in. thick, and an important feature is that these boats can be manufactured very quickly and cheaply.

British Columbia's Shipbuilding.—According to a statement issued at Vancouver, B.C., there are $27,000,000 worth of steel and wooden vessels under construction or contracted for. While the shipbuilding industry of the Province is by no means new—wooden ships having been built there as far back as 1788—its firm establishment as one of the chief assets of the west coast of Canada has taken place within the past year. The Aid to Shipping Act, passed by the Conservative Government early in 1916, drew attention to the facilities available for shipbuilding, and soon afterwards contracts were placed for the construction of 10 auxiliary power wooden schooners. This particular type of vessel costs about $150,000, and is similar to the motor-sail ships that have been built in the Pacific States. They are 225 ft. long, 44 ft. beam and 32 ft. deep. Bolinder engines of 160 h.p. drive twin-screws.

Sea-going Concrete Motor Ships.—After the Fougner Company (founded at Moss in 1915) had completed its first concrete barge, a Government Commission, with representatives of shipbuilders, was appointed to consider whether concrete vessels were safe enough for sea-service. The Commissioners came to the conclusion that there was nothing against the use of reinforced concrete for sea-going vessels, but that constructional parts should be 20 per cent. stronger than demanded by previous experience with small concrete vessels. The Fougner yard has now undertaken the construction of several motor cargo vessels for sea service. A 600-ton vessel (142 by 27½ ft.), with a 250 h.p. crude-oil motor in the stern, is on order for G. M. Bryde (Christiania). A larger vessel, of 1,000 tons d.w. capacity, with two 160 h.p. hot-bulb engines, is on order for Gunnar Brekke (Bergen). Both these vessels should be completed this year, and it is hoped that they will represent a revolution in shipbuilding, justifying the claim that concrete vessels can be built in half the time, and at 30 per cent. less cost than steel vessels. It is reported that the Staal-Beton Shipping Company (Christiania) has ordered two 1,000-ton concrete vessels from the Fougner yard for delivery in 7 to 8 months. The cost is £28,200 each (*i.e.*, £28 4s. per ton), viz., £13,800 for the hull; £7,700 for two Bolinder motors (320 h.p. total); fitting out, and 15 per cent. profit, £6,600. So great is the demand for concrete vessels in Norway, that three other yards have been established to work on Fougner's patents. The Fougner yard has been considerably extended and its capital raised to £110,000.

Chamber of Shipping.—The meeting of the Executive Council of the Chamber of Shipping of the United Kingdom on August 28 was the first meeting to be held in the new offices of the Chamber at 24, St. Mary Axe.

Shipbuilding in Japan.—A large order has been received by the Kawasaki Dockyard Company, of Kobe, from Great Britain. The total value of the ships ordered amounts to more than 50,000,000 yen. There will be 14 freighters, the tonnage of which ranges between 9,000 and 12,000.

Heavy Argentine Shipping Tax.—The Argentine Government has decided to impose a war tax on all shipping visiting the ports of that country. This tax is on the basis of 50 cents per ton in gold —equal to 2s. per ton net register. This is a very heavy impost, and steps have been taken to bring the matter to the notice of the British authorities.

Inspection of Standard Ship.—Mr. John L. Young, branch secretary, and Mr. W. C. MacGibbon, member of committee, representing one of the branches of the Marine Engineers' Association, recently inspected a standard ship, and found the engineers' quarters all that could be desired, each engineer having a separate cabin, with spacious rooms for messing and recreation.

Balboa Old Steel Pier.—The *Panama Canal Record* states that the old steel pier at Balboa, in service since the latter part of 1899, and abandoned after the completion of Pier 18 last year, is being fitted up for use as a storehouse by the Army forces. Arrangements have been made, however, for its commercial use if need should arise, and it will be used also as a berth for oil carriers. At present the wharfage needs at the Pacific terminal are met amply by Pier 18 and the quay wall.

Interned Merchant Seamen and Fishermen.—The Board of Trade have issued a list of merchant seamen and fishermen detained as prisoners of war in Germany, Austria-Hungary, and Turkey. The list contains an alphabetical index of prisoners, and an index of interned crews of vessels arranged alphabetically according to the names of the vessels, and showing rating, address, and last reported place of internment. The list may be consulted at any of the Mercantile Marine Offices of the Board of Trade.

British Westinghouse Employees' War Relief Fund.—The accounts and balance-sheet show that the total contributions to June 30, 1917, amount to £43,093, of which £29,102 has been contributed by the employees and £13,990 by the company. From this sum £25,835 has been paid to dependants, £11,678 set aside for a disablement and dependants' fund, and over £2,080 has been spent in donations to local and national funds, Christmas gifts and payment to Red Cross workers. The number of families in receipt of relief is 718, and the number of employees who have joined His Majesty's forces is 2,702.

THE INSTITUTE OF METALS.

Autumn Meeting.

The annual meeting of the Institute of Metals will be held on Wednesday, September 19, in the rooms of the Chemical Society, Burlington House, Piccadilly, W. 1. At the opening session, between the hours of 4 p.m. and 6.30 p.m., the following communications will be presented :—

(1) "Experiments on the Fatigue of Brasses." By B. Parker Haigh, D.Sc. (London).

(2) "Hardness and Hardening." By Prof. T. Turner, M.Sc., A.R.S.M. (Birmingham).

(3) "The Effects of Heat at Various Temperatures on the Rate of Softening of Cold-rolled Aluminium Sheet." By Prof. H. C. H. Carpenter, M.A., Ph.D., A.R.S.M. (London), and L. Taverner, A.M.S.M. (London).

(4) Note on "A Comparison Screen for Brass." By O. W. Ellis, M.Sc. (London).

At the evening session, from 8 p.m. to 10 p.m., the programme will be as follows :—

(5) "Further Notes on a High Temperature Thermostat." By J. L. Haughton, M.Sc. (Teddington), and D. Hanson, M.Sc. (Teddington).

(6) "Principles and Methods of a New System of Gas Firing." By A. C. Ionides (London).

(7) "Fuel Economy Possibilities in Brass Melting Furnaces." By L. C. Harvey (London).

(8) "The Effect of Great Hydrostatic Pressure on the Physical Properties of Metals." By Prof. Zay Jeffries, B.Sc. (Cleveland, U.S.A.).

(9) Note on "The Use of Chromic Acid and Hydrogen Peroxide as an Etching Agent." By S. W. Miller (Rochester, N.Y., U.S.A.).

In connection with Mr. Ionides' paper, a demonstration of a new system of furnace heating will be given, and it is expected that this paper will give rise to an animated discussion on metal melting, a subject that aroused the greatest interest at the Spring Meeting of the Institute.

Invitations to be present at the meeting can be obtained by non-members of the Institute of Metals on application being made to Mr. G. Shaw Scott, M.Sc., Secretary and Editor, 36, Victoria Street, S.W. 1, from whom also particulars of the forthcoming ballot for the election of new members can be obtained. So great is the present interest in metallurgical matters that the membership of the Institute has increased, we are informed, since January 1 last, by over 30 per cent.

"SHIPBUILDING AND SHIPPING RECORD" TABLE OF SHIP SALES.

Name and Type.	Tonnage.	Dimensions. Draught in ( ).	Sold by, to	Builders, hull and year	Machinery and builders.	Remarks.
Amelia, ss. (single dk.)	1,271 gr. 744 net	227½′ × 31½′ × 13½′ (15′ 9″)	Donald S.S. Co., Montreal, to American buyers	Swan, Hunter & Wigham Richardson, Ltd., Newcastle (1906)	21, 34, 56 × 36 (N.E. Mar. Eng. Co., Newcastle)	
Arno, ss. (well dk.)	745 gr. 396 net 816 d.w.	190′ 27′ 13½′ (14′)	Royal Mail S.P. Co., London, to Adam Bromley & Son Bolton	S. McKnight & Co., Ayr (1894)	17, 27½, 44 33 (Muir & Houston, Glasgow)	Price about £25,000.
Banchory, ss. (single dk.)	2,189 gr. 1,317 net 3,800 d.w.	287′ 44′ 19′ (18′ 5″)	Underwood Shipping Co., Ltd., Cardiff, to the Haenton S.S. Co., Ltd., Cardiff	Craig, Taylor & Co., Stockton (1914)	21, 35, 57 39 (N.E. Mar. Eng. Co., Sunderland)	—
Bronze Wings, ss. (single dk.)	5,170 gr. 3,293 net 8,100 d.w.	375½′ 51½′ 23½′ (24′ 10″)	A. Capel & Co., Ltd., London, to P. Samuel & Co., Ltd., London	Northumberland S.B. Co., Ltd., Newcastle (1915)	25, 41, 69 × 48 (N.E. Mar. Eng. Co., Newcastle)	—
Deepwater, ss.	5,266 gr. 3,354 net	368½′ 55¼′ 30½′	Darrow Mann Co., Boston, Mass., to the American & Italian S.S. Co.	New York S.B. Corpn., Camden, N.J. (1917)	27, 45, 75 × 51 (New York S.B. Corpn.)	Price about £400,000.
Harpoa, ss. (well dk.) (ex *Hylton*)	1,484 gr. 899 net 2,200 d.w.	250′ 35½′ 16′ (16′ 11″)	Cia. Argentina de Pesca, Buenos Ayres, to the French Government	Strand Slipway Co., Sunderland (1897)	19, 31, 51 × 33 (N.E. Mar. Eng. Co., Sunderland)	Price about £142,500.
Lauriston, s.v.	2,301 gr. 2,113 net	284½′ 42′ 24½′	Hudson's Bay Co., London, to Russian buyers	Workman, Clark & Co., Belfast (1892)		—
Nevada, ss. ..	2,122 gr. 1,078 net	212′ × 42½′ × 24½′	Goodrich Transit Co., Chicago, to the Russian Government	Manitowoc S.B. & D.D. Co., Manitowoc (1915)	28½, 34½, 56 36 (Gt. Lakes Eng. Wks., Detroit)	Price about £150,000
Querida, ss. (single dk.)	1,175 gr. 690 net	230′ 36½′ 16′ (16′)	C. Tennant, Sons & Co., Ltd., Bristol, to J. Cory & Sons, Ltd., Cardiff	Swan, Hunter & Wigham Richardson, Newcastle-on-Tyne (1909)	17, 28, 46 × 33 (N.E. Mar. Eng. Co., Newcastle-on-Tyne)	—

OFFICIAL NOTICES AND SHIPS FOR SALE.

THOS. PINKNEY & SONS

(Thos. Pinkney, S. Renny Pinkney, David R. Pinkney).

SHIPPING AUCTIONEERS.

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OF
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"SHIPBUILDING AND SHIPPING RECORD" TABLE OF SHIP SALES—*continued.*

Name and Type.	Tonnage	Dimensions. Draught in ( ).	Sold by, to	Builders, hull and year.	Machinery and builders.	Remarks.
Glencarron, ss.	5,117 gr. 8,100 d.w.	400′ × 53′ × 27¼′ (24′ 3″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	Ayrshire Dockyard Co., Irvine (1917)	27, 43, 72 × 48 (Dunsmuir & Jackson, Ltd., Glasgow)	
Glenlee, ss. ..	5,200 gr. 8,100 d.w.	400′ × 53′ × 27¼′ (24′ 3″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	C. Connell & Co., Glasgow (1917)	27, 43, 72 × 48 (Dunsmuir & Jackson, Ltd., Glasgow)	
Glenlyon, ss. ..	5,200 gr. 8,100 d.w.	400′ × 53′ × 27¼′ (24′ 3″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	C. Connell & Co., Glasgow (1917)	27, 43, 72 × 48 (Dunsmuir & Jackson, Ltd., Glasgow)	
Glennevis, ss.	5,119 gr. 8,100 d.w.	400′ × 53′ × 27¼′ (24′ 3″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	Ayrshire Dockyard Co., Irvine (1917)	27, 43, 72 × 48 (Dunsmuir & Jackson, Ltd., Glasgow)	
Glenetive, ss. ..	5,212 gr. 3,322 net 8,500 d.w.	410½′ × 52½′ × 28½′ (25′ 6″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	C. Connell & Co., Glasgow (1911)	26½, 44, 73 × 51 (Dunsmuir & Jackson, Ltd., Glasgow)	
Glenaffric, ss...	4,144 gr. 2,658 net 6,825 d.w.	376¾′ × 49½′ × 26¼′ (23′ 9″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	C. Connell & Co., Glasgow (1905)	25½, 42, 68 × 48 (Dunsmuir & Jackson, Ltd., Glasgow)	
Glendhu, ss. ..	4,129 gr. 2,629 net 6,825 d.w.	376¾′ × 49½′ × 26′ (23′ 9″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	C. Connell & Co., Glasgow (1905)	25½, 42, 68 × 48 (Dunsmuir & Jackson, Ltd., Glasgow)	
Glenshiel, ss. (spar dk.)	4,798 gr. 3,054 net 7,750 d.w.	400′ × 52′ × 26¼′ (24′)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	C. Connell & Co., Glasgow (1909)	27, 43, 72 × 48 (Dunsmuir & Jackson, Ltd., Glasgow)	Price about £2,000,000.
Glenorchy, ss. (spar dk.)	4,737 gr. 3,019 net 7,740 d.w.	400′ × 52′ × 17¼′ (24′ 1″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	Scotts' S.B. & Eng. Co., Greenock (1909)	27, 43, 72 × 48 (Scotts' S.B. & Eng. Co.)	
Glenspean, ss.	5,221 gr. 3,322 net 8,500 d.w.	410½′ × 52½′ × 28½′ (25′ 6″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	C. Connell & Co., Glasgow (1912)	26½, 44, 73 × 51 (Dunsmuir & Jackson, Ltd., Glasgow)	
Kincraig, ss. ..	3,707 gr. 2,382 net 6,150 d.w.	353¾′ × 45′ × 25½′ (23′ 7″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	C. Connell & Co., Glasgow, (1901)	25, 41, 66 × 45 (Dunsmuir & Jackson, Ltd., Glasgow)	
Kintail, ss. (spar dk.)	3,537 gr. 2,252 net 6,100 d.w.	349½′ × 46½′ × 17¼′ (23′ 7″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	C. Connell & Co., Glasgow (1907)	25, 41, 66 × 45 (Dunsmuir & Jackson, Ltd., Glasgow)	
Glendevon, ss.	4,169 gr. 2,625 net 6,825 d.w.	377′ × 49½′ × 26′ (23′ 9″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	C. Connell & Co., Glasgow (1907)	25½, 42, 68 × 48 (Dunsmuir & Jackson, Ltd., Glasgow)	
Glenelg, ss. ..	4,160 gr. 2,669 net 6,830 d.w.	376¾′ × 49½′ × 26¼′ (23′ 8″)	J. Gardiner & Co., Glasgow, to Furness, Withy & Co., Liverpool	C. Connell & Co., Glasgow (1904)	25½, 42, 68 × 48 (Dunsmuir & Jackson, Ltd., Glasgow)	
Ramon de Larrinaga, ss.	3,058 gr. 1,983 net	350′ × 40′ × 25½′ (24′ 2″)	Larrinaga & Co., Ltd., Liverpool, to Hijos de José Faya, Barcelona	C. Connell & Co., Glasgow (1889)	26, 42, 68 × 48 (J. & J. Thomson, Glasgow)	—
Suwannee, ss...	3,648 gr. 2,300 net	309′ × 46¼′ × 19½′	Merchants & Miners' Transportation Co., Baltimore, to the Ocean S.S. Co., of Savannah	New York S.B. Co., Camden, N.J. (1911)	28, 45, 75 × 48 (New York S.B. Co.)	—
Tokai Maru, ss. (spar dk.) (ex *Baron Eldon*)	3,739 gr. 2,287 net 6,250 d.w.	340′ × 48′ × 17¾′ (23′ 6″)	Okazaki Kisen Kabushiki Kaisha, Kobe, to buyers not stated	Bartram & Sons, Sunderland (1899)	24½, 40, 66 × 45 (J. Dickinson & Sons, Sunderland)	Price about £345,000.
Wellgunde, s.v.	1,909 gr. 1,746 net	264¾′ × 40′ × 22¾′	H. Fölsch & Co., Hamburg, to Carl Joh. Klingenberg & Co., Bremen	A. Rodger & Co., Port Glasgow (1904)	—	—

SHIPPING SHARE MARKET.

The stock and share markets in the shipping section have been very quiet without any important movement in prices. There has been exceptional activity in Peninsular & Oriental deferred, but the bargains have been at prices only a little lower than those ruling in the previous week. The company's financial year ends in the present month. The final dividend is usually announced about the second week in November. Royal Mail stock has been dealt in on a very limited scale. The recent activity in Argentine Steam Navigation shares has continued, but on a less extended scale and at prices which are more in keeping with the facts, so far as they are known to the market. Some recent purchasers on an excited market appear to have burnt their fingers. Furness Withy ordinary shares changed hands at 46s. after the announcement that the company had purchased the fleet of 14 Glen Line steamers (about 70,000 tons gross) from James Gardiner & Co., of Glasgow. This policy of replenishing the Furness Withy fleet is in accord with that laid down by Lord Furness at the last meeting of shareholders. It is known that the directors of the company look for severe competition after the war and for a further rise in the price of tonnage. Among smaller companies' shares in the market there has not been much movement. Some discussion took place among members on the issue of the circular of the Griffiths-Lewis Steam Navigation Co., in which the directors state that they have decided to defer the payment of the dividend declared owing to the intention of the Government to institute a new scheme for covering all British steamers against war risks, "which scheme predicates serious losses to all cargo steamship companies." This loss, it is explained, may either take the form of a heavy capital depreciation of requisitioned vessels or of heavy trading losses in respect of so-called free ships. The iron and steel section has been very brisk, and there have been repeated enquiries from the provincial centres for shipbuilding companies' issues. The dividends now being announced in the miscellaneous section are increasing the interest of the public.

SHIPPING, SHIPBUILDING, ENGINEERING AND MARINE INSURANCE SHARE LIST.

SHIPPING.

Name.	Share and paid.	Extreme quotations, 1916.	Last ann. div. % or per share.	Yield. %	Last Quotation	Rise or Fall.
	£					
African S.S.	20	33—23½	10	6¾	29	
Allan Line ... ... Deb.	100	—	4	4⅜	92	
Anchor Line ... Cum. pref.	10	9¾—9½	5⅜	5⅝	9½	
Do. ... ... Deb.	Stk.	105⅝—102½	4⅜	4⅜	102	
Argentine Nav. ... Cum. pref.	1	19/6—11/-	Nil.	Nil.	24/-	
Do. ... ... Ord.	1	14/6—5/6	Nil.	Nil.	19/6	+ 1/3
Australasian Un. S. Nav. Deb.	Stk.	83⅜—80⅜	4	5⅛	78	
Belfast Steam ... ... "A"	10 (5pd.)	—	5	5	5	
British & African Nav. Deb.	Stk.	96½—91	4½	4⅝	102	
British India Nav. ... Deb.	Stk.	94½—88½	4½	5⅛	83	
British S.S. Invest. Trust Def.	Stk.	357—190	30*	8⅜	350	
Do. ... ... Pref.	Stk.	108—105⅛	6	6	101xd	
Do. ... ... Deb.	Stk.	79—77⅜	4⅛	6⅛	74	
Cairn Line ... ... Deb.	Bds.	99—88	5	5⅛	90⅜-91	
Do. ... ... Ord.	1	—	20†	9⅜	40 9	—1/9
Clan Line ... ... Ord.	10	32½—22½	25	9⅜	29	
Court Line ... ... Ord.	£1	42/—26/-	20	12	31/-xd	
Cunard SS. ... ... Ord.	1	101/—68/-	20*	5½	72/-	—3/-
Do. ... Cum. pref.	Stk.	95—89	5	5⅜	85¼	
Do. ... ... Deb.	Stk.	99⅜—93½	4⅜	4⅝	96	
Elder Line ... ... Deb.	Stk.	97¾—89⅜	4⅜	4⅜	103	
Elder Dempster ... Cum. pref.	1	20/6—18/1⅜	5⅜	5⅜	18/-	
Do. ... ... Deb.	Stk.	92⅜—88⅜	5	5⅞	85	
Ellerman Lines ... Pref. Ord.	10	9⅛—9¼	6½	6⅞	8¾	
Do. ... Guar. pref.	10	9⅛—8¾	4⅜	5⅛	8⅜	
France Fenwick ... Cum. pref.	5	98/5—92/6	5⅜	6¼	90/-	
Furness, Withy ... Ord.	1	61/3—34/3	20*	9⅜	46/9	+ 1/9
Do. ... Cum. pref.	10	9½—7⅜	5	6⅜	8¾	
General Steam Nav. Ord.	7⅜	12⅞—8½	15	7⅜	22/6	
Do. ... ... Pref.	8	7⅞—6⅜	6	7⅜	16/-	
Houlder Line ... Cum. pref.	5	83/9—67/6	5⅜	7⅛	77/6	
Do. ... ... Deb.	Stk.	—	4⅛	4⅜	93	
Houlder Bros. ... Cum. pref.	5	—	5⅜	5⅜	4	
Do. ... ... Deb.	Stk.	—	4⅜	5⅜	82	
India Gen. Nav. & Rly. ... Ord.	10	12—8⅜	6	5⅞	10⅜	
Indo-China N. ... Pref. Ord.	5	5⅞—90/-	6	6⅜	90/-	
Irrawaddy Flotilla	40	—	15	5⅜	116	
Khedivial Mail ... ... Ord.	1	37/—10/-	25	13⅜	35/-	
Do. ... ... Pref.	5	77/6—60/6	5⅜	7⅜	75/-	
Do. ... ... Deb.	Stk.	94¾—87¼	4⅜	4⅝	95	
King Line ... ... Ord.	1	—	16*	9⅜	37	
Lamport & Holt ... Cum. pref.	£1	20/9—18/9	6	6	19/6	
Leyland (F.) ... Cum. pref.	10	8½—6½	5	6¾	7½	
Mercantile SS. ... ... Ord.	5	18⅝—12	40	13	15	
Do. ... ... Pref.	1	20/1⅜—20/-	5	6¼	16/3	
Moor Line ... ... Ord.	10	—	30	13	24⅜	
Nelson Steam Nav. ... Deb.	100	98¾—97½	5	5⅛	98¾	
New Zealand ... ... Ord.	£10	—	8	2⅜	32½	
Do. ... ... Deb.	Stk.	90⅜—88	4	4⅜	86	
Nitrate Producers SS. ... Ord.	5	25¾—18	30	6¼	24⅜	
Do. ... Cum. pref.	5	—	5	5	5	
Oceanic Steam. Nav. ... Deb.	100	99—95½	4⅜	4⅝	96	
Orient.Stm.Nav.Co. Cum. pref.	10	9⅜—9⅛	5	5⅝	9	
Do. ... ... Deb.	100	98—91½	4½	5⅛	89	
P. & O. S. N. ... Cum. pref.	100	100—91	5	5⅝	90	
Do. ... ... Def.	100	349—270	18	5⅝	320	—5
Do. ... ... Deb.	Stk.	71—69	3⅜	5⅜	63¾	—1¼
Prince Line	1	95/—26/-	30	8⅛	87/6	
R.M.S.P. ... ... Ord.	100	134⅜—97½	7	6⅛	112	—2
Do. ... ... Pref.	Stk.	86½—76½	5	6⅛	81	
Do. ... ... Deb.	Stk.	89—86	4⅜	5⅛	85	
Shaw, Savill & Alb. Cum. pref.	5	95/—86/3	5¼	5⅞	85/-	
Shell Transport ... ... Ord.	1	6—4⅜	35	5⅜	5⅝	
Do. ... Cum. pref.	10	10⅜—9	5	5⅜	9⅜	
Sutherland SS. Co.	£1	69/6—41/6	30	10	52/-	
Union-Castle SS. Cum. pref.	10	7½—7	4⅜	5	7⅜	
Do. ... ... Deb.	Stk.	92⅜—86⅜	4	4⅜	87⅛	
West Hartlepool ... ... Pref.	10	8¼—7⅜	5⅜	7⅜	7⅜	

INSURANCE.

Alliance	20 (2·4 pd.)	10½—8¾	12/-	7	10	
Indem. Mutual Marine	15 (3 pd.)	13¾—9⅜	15/-	5	20⅜	
London Assurance	25 (12½ pd.)	52⅜—42½	20	6	57	
Marine Insurance	25 (15 pd.)	36¾—33⅜	45/-	6	56½	+ ¼
Merchants' Marine Insurance ...	10 (2½ pd.)	7⅛—71/3	10	6	9⅜	
N. British & Mercantile Ord.	25 (6¼ pd.)	34⅜—29	40/-	6⅜	35⅜	+ ⅜
Phœnix Assurance	10 (1 pd.)	7⅜—5⅞	40	7	7 5/16	+ 1/16
Reliance Marine	10 (2 pd.)	—	20	4⅛	7¾	
Royal Exchange Assurance ...	Stk.	189½—181	10	5⅝	219	
Sea Insurance	10 (2 pd)	19½—19⅛	10	6	28	
World Marine, Limited ...	5 (2 pd.)	61/3 –35/-	5	4¼	6¼	

IRON AND STEEL.

Name.	Share and paid.	Extreme quotations, 1916.	Last ann. div. % or per share.	Yield. %	Last Quotation	Rise or Fall.
	£					
Babcock & Wilcox... ... Ord.	1	64/6-47/10⅜	15	5	62/-	— -/6
Baldwins ... Cum. pref.	1	1⅛—1	5⅜	5⅜	20/-	
Do. ... ... Deb.	Stk.	87⅛—86¼	4⅛	5⅛	84	
Bayliss, Jones ... Cum. pref.	1	—	5	7¼	¼	
Bell Bros. ... ... Cum. pref.	10	10 3/16—9 3/16	6	6½	9⅜	
Do. ... ... Deb.	Stk.	80—78⅜	5	6⅜	75⅜	
Bessemer (Henry) ... Ord.	1	29/—26/-	12⅜	12	25/3	
Bolckow Vaughan ... Ord.	1	25/10⅜-18/-	11	9⅛	26/6	
Do. ... ... Cum. pref.	20	19—18	5	5⅝	16xd	
Cargo Fleet Iron ... ... Ord.	1	23/3-13/10⅜	3	3⅛	21/1½	— -/4½
Do. ... ... Deb.	100	86½—84	4⅜	5⅛	82	
Consett Iron Co. ... ... Ord.	1	89/4½—65/3	50	11⅜	88/6xd	
Dominion Iron & Steel	Bds.	83—78	5	6⅜	79¼	
Dorman, Long ... ... Ord.	1	36/—22/3	14	9	39/6	— -/6
Do. ... ... Deb.	Stk.	97⅜—97	4	5⅛	73	
Ebbw Vale Steel & Iron Ord.	1	28/7½—19/-	12⅜	9⅜	28/3	+ 1/3
Guest, Keen & Nettefids Ord.	1	71/3 - 60/-	15*	3⅜	79/6	+ 2/-
Do. ... ... Cum. pref.	5	5⅞—5⅜	5	4⅜	5⅜	
Do. ... ... Deb.	Stk.	82⅜—80½	4	5⅛	79½	+ 3¼
Hadfield's Steel Foundry Ord.	1	82/6 - 69/-	30	6¾	91/-	+ 1/-
Ibbotson Bros.	5 (4 pd.)	8—6	7⅜	4½	6½	
Jessop (W.) & Sons ... Ord.	5 (4 pd.)	9—8	15*	7¼	8⅛	
Lanarkshire Steel Cum. pref.	10	—	5	7⅛	7	
Lysaght (J.) ... Cum. pref.	1	22/7⅜—20/3	6	6	20/-	
Do. ... ... 2nd pref.	1	21/1½—21/-	6	6	20/-	
Manganese Bronze ... Ord.	1	—	6	11	⅛	
Do. ... ... Cum. pref.	1	—	6	8	¾	
North-Eastern Steel ... Deb.	Stk.	—	4⅛	—	—	
Palmers Ship & Iron "A"	1	12/6—9/-	Nil.	Nil.	9/9	
Scott (Walter) ... ... Ord.	1	26/3—17/9	15	10⅜	27/6	
Do. ... ... Pref.	1	16/10⅜—16/3	6	7⅜	16/3	
Sheffield Forge ... ... Ord.	1	—	15	6⅜	53/6	
Shelton Iron & Steel ... Ord.	1	20/4½—15/-	7⅛	8⅜	20/4½	+ -/4½
Do ... ... Deb.	100	94—92½	5	5½	91½	
S. Durham Steel & Iron Ord.	1	37/6—27/-	10	6⅜	37/9	+ 1/3
Do. ... ... Cum. pref.	1	21/—19/-	6	6⅛	20/-	
Do. ... ... Deb.	Stk.	82—80	4⅜	5⅜	80	
Steel Co. of Scotland ... Ord.	10	—	10	10	12/1/-	
Stewarts & Lloyds Pref. ord.	10	18⅜—17	10	5⅞	15⅜	
Do. ... ... Cum. pref.	10	—	6	4⅜	13⅛	
Stone (J.) ... ... Cum. pref.	10	—	5	6¼	8	
United States Steel ... Ord.	100⅜	144⅜—83½	8	6¾	116 1/16	
Do. ... ... Cum. pref.	100⅜	128⅛—112½	7	5⅜	124 1/16	
Vickers Ltd. ... ... Ord.	1	40/3—33/6	12⅜	7¼	38/1⅜	—1/-
Do. ... ... Pref.	Stk.	93—85	5	6	84	
Do. ... ... Deb.	Stk.	83—75	4	5 3/16	77⅜	
Weardale Steel ... Def. ord.	1	34/—19/1⅜	19⅛	13½	28/6	— -/6
Do. ... ... Cum. pref.	1	23/6—17/6	6	5	25/-	+ 1/-
Do. ... ... Deb.	Stk.	70⅛—69¼	4	6	63	
Workington Iron & Steel Ord.	1	24/3—14/3	10	7⅜	27/1⅜	+ 1/1⅜

SHIPBUILDING AND MARINE ENGINEERING.

Armstrong, Whitworth Ord.	1	43/—34/6	12⅜	7	39/3	+ -/3
Do. ... ... Cum. pref.	5	75/—67/6	4	5⅞	70/-	
Do. ... ... Deb.	Stk.	80¼—75	5	6⅜	76	
Beardmore (W.) ... ... Deb.	100	99—92	4⅜	5	91	
Brown (John) ... ... Ord.	1 (15s. pd.)	27/3 - 20/6	12⅜	8⅛	26/6	+ -/3
Do. ... ... Cum. pref.	10	10—5⅜	5	5⅞	8½	
Cammell Laird ... ... Ord.	5	7—98/-	10	8	6 1/16	
Do. ... ... Cum. pref.	5	88/—76/3	5	6⅜	82/6	
Do. ... ... Deb.	100	93⅛—85	4⅜	5⅜	81	
Dunlop (Jas.) ... ... Ord.	1	19/7½-13/4½	10	10⅝	19/-	
Do. ... ... Cum. pref.	1	17/1⅜-16/4½	6	7⅛	17/6	
Fairfield Shipbldg Cum. pref.	10	8⅜—8 5/16	6	7⅛	8⅜	
Fleming & Ferguson ... Ord.	10	—	10	7	14½	
Gray (Wm.) ... ... Deb.	100	100¼—99¼	4⅛	4⅜	100¼	
Hawthorn (R. & W.) Leslie Ord.	10	15⅜—14	12⅝	8	15¼	
Henderson (D. & W.) Cum. pref.	1	—	5	8 7/16	1 1/16	
Richardsons Westgarth Ord.	1	7/9—2/10⅜	Nil.	Nil.	6/6	
Do. ... ... Cum. pref	1	15/7⅜—8/-	Nil.	Nil.	14/1½	+ -/7⅜
Do. ... ... Deb.	Stk.	69—67¼	4⅛	6¼	63	
Simons (W.) ... Cum. pref.	10	—	5	5	9 1/16	
Swan, Hunter & W. R. ... Ord.	1	35/6—26/-	12⅜	6¼	41/-	+ 1/-
Do. ... ... Cum. pref.	1	18/9—17/-	5	5⅜	17/6	
Do. ... ... Deb.	Stk.	82—80⅜	4⅜	5⅜	78	
Thornycroft (John I.) ... Ord.	1	38/9—21/9	17⅜	9¼	38/6	+ 2/7½
Do. ... ... Cum. pref	1	18/6—16/3	6	6⅜	17/6	
Do. ... ... Deb.	100	95⅜—88	5	5⅞	84½	
Wallsend Slipway ... Ord.	1	2—1⅛	10	5	2	
Do. ... ... Cum. pref.	1	1—1	5	5	1	

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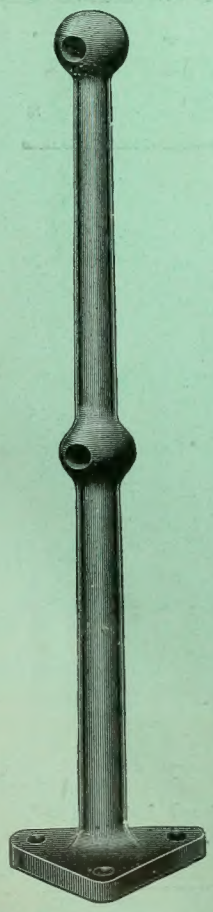

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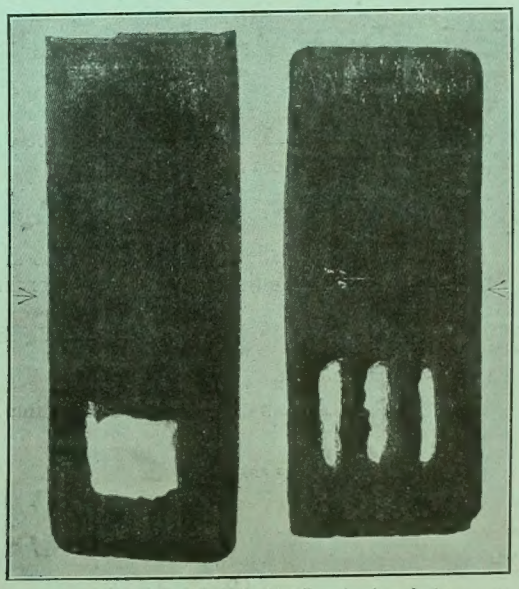
immersed in a 16% solution of Nitric Acid
for a period of Ten Days.



The plates were painted with "Bituferri," and, after drying, parts were scraped on both sides with a knife laying bare the metal. After ten days immersion the BARE METAL was entirely eaten away, but the "BITUFERRI" was untouched, not even the gloss being destroyed.

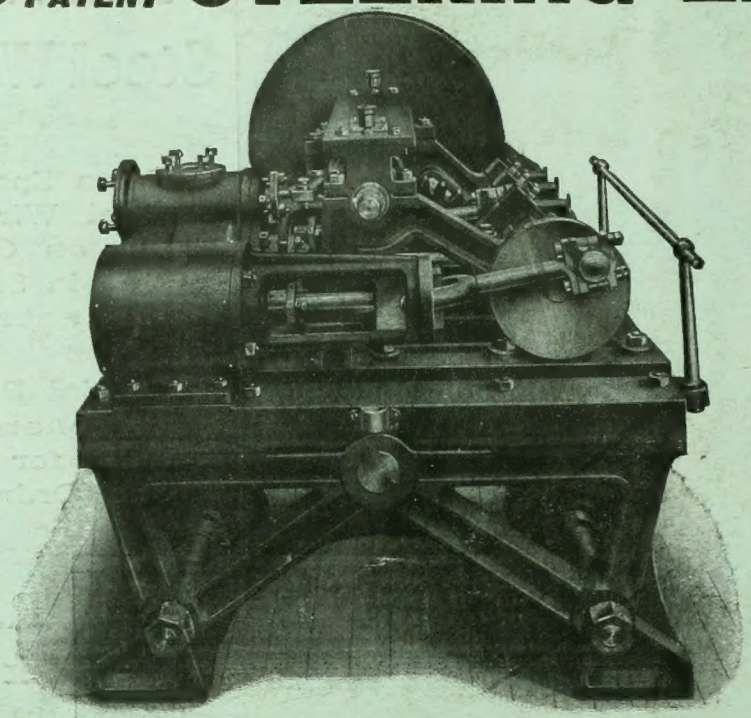
THE PLATES WERE IMMERSED TO THE DEPTH OF THE ARROW.

Sole Manufacturers :
ARCHD. H. HAMILTON & CO.,
Telegrams: "Satisfy." POSSILPARK, GLASGOW.

SAY YOU SAW IT IN THE "S. & S. R."

THE "MOSS" PATENT STEERING ENGINE

THE CYLINDERS ARE FIXED AND THE ORDINARY SLIDE VALVES, ECCENTRICS, AND RODS ARE DISPENSED WITH.



HAVING FEWER WORKING PARTS THE COST OF UPKEEP IS CONSIDERABLY LESS THAN ANY OTHER STEERING GEAR.

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The S.O.S. "LISTER-BRUSTON" Automatic Electric Generating Plant is so designed that immediately the voltage of the ship's main electrical supply falls below a predetermined point, the plant automatically starts up.

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This plant automatically starts up and stops at any predetermined time daily, to indicate that it is in working order.

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Upon the resumption of the main supply the S.O.S. "LISTER-BRUSTON" Automatic Electric Generating Plant automatically stops.

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R. A. LISTER & CO., Ltd.

(Dept. B 24),

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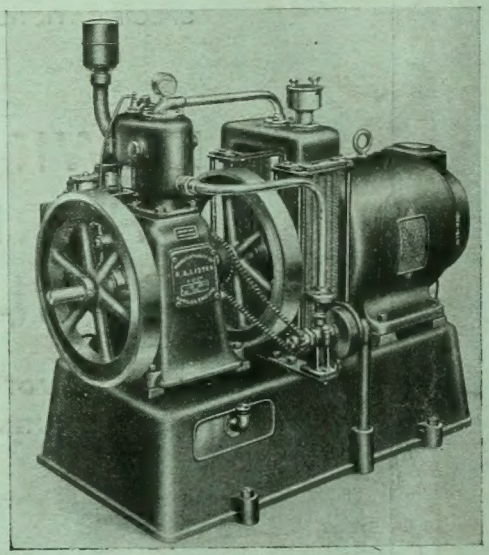
Established 1867.



The "Lister-Bruston" (Patent) Automatic Electric Generating Plant, S.O.S. Type.

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